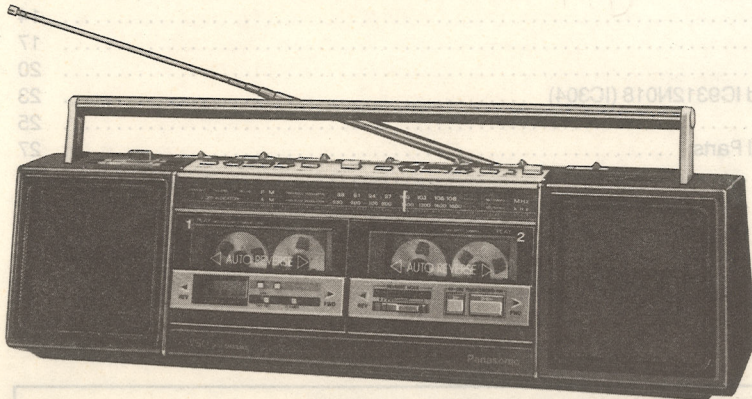


Service Manual

FM-AM-FM Stereo Radio Cassette Recorder

Radio Cassette
RX-FW50
(Black)



This is the Service Manual
for the following area.

M...For U.S.A.

RX-C48 MECHANISM SERIES

SPECIFICATIONS

General:

Power Requirement: AC; 120 V, 60 Hz (AC adaptor)
Battery; 9 V (six UM-2, "C" size batteries)
Car Battery; with optional car adaptor RP-917H

Power Consumption: 12 W (AC adaptor only)

Power Output: 5.4 W (2.7 W×2)...RMS (max.)

Speaker: Woofer; 4" (10 cm) PM Dynamic
Speaker (2.7Ω)

Input: MIC; sensitivity 0.4 mV/applicable
impedance 200~600Ω
LINE IN; sensitivity 200 mV/40 kΩ over
HEADPHONES; 32Ω

Output: 20" (W)×5½" (H)×5½" (D)

Dimensions: [510 (W)×140 (H)×130 (D) mm]

Weight: 6 lbs. 6.3 oz. (2.9 kg) without battery

Radio Section:

Radio Frequency Range: FM; 88~108 MHz
AM; 525~1610 kHz

Intermediate Frequency: FM; 10.7 MHz
AM; 455 kHz

Sensitivity: FM; 2 μV/50 mW output
AM; 60 μV/m/50 mW output

Tape Deck Section:

Frequency Response: 60~15,000 Hz (with normal tape)
60~16,000 Hz (with CrO₂ tape)

Recording System: AC bias, AC erase

Tape Speed: 1½ ips (4.8 cm/s)

Track System: 4-track 2 channel stereo recording and
playback.

Weights and dimensions shown are approximate.
Design and specifications are subject to change without notice.

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TPS (TAPE PROGRAM SENSOR) (TAPE 1, TAPE 2)

The Tape Program Sensor system can be set to automatically play back a predetermined selection on a recorded cassette tape.

- Set the TPS/Blank Skip Switch to "[1]/OFF" or "[2]/ON".
 "[1]/OFF"...TPS will function in TAPE 1 only.
 "[2]/ON"... TPS will function in TAPE 2 only.
- Press either side of the Fast Button (◀▶ or ▶▶).

•The Forward or Reverse Indicator will flash.

Fast Buttons	Operation	
	REV	FWD
	Reverse playback	Forward playback
	Present program	Next program
	Next program	Present program

- When the start of the desired selection is reached, the Forward or Reverse Indicator will stop flashing and stay lit, and playback will start.

In the following instances the Tape Program Sensor system may not operate normally. This does not, however, indicate a failure.

- With tapes of conversations having a great many gaps in the dialog.
- With tapes having tracks with extremely low sound levels.
- With tapes having portions among the tracks where no sound has been recorded.
- With tapes having intervals of less than 4 seconds long.
- With tapes having a high level of noise during the intervals.
- When less than 10 seconds separate the program you are listening to and the next program when you want to move on to listen to the next program.

Blank Skip Function (TAPE 2)

•Useful for skipping over the unrecorded portion at the end of the tape during auto-reverse playback.

- Insert a cassette to Tape 2, and set this unit to the playback mode.
- Set the TPS/Blank Skip Switch to "[2]/ON".

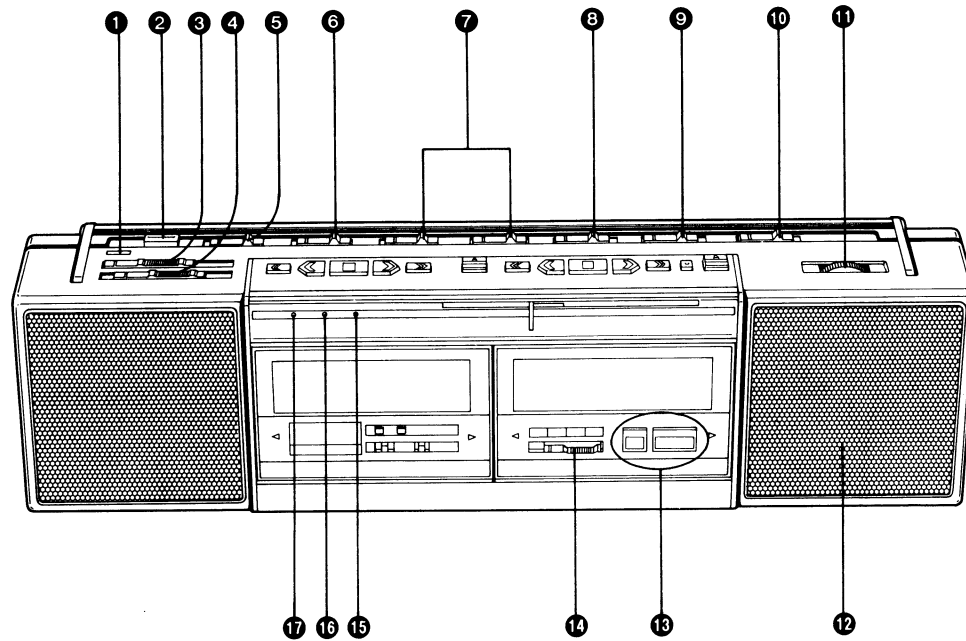
Tape	Operation	
	TPS	Blank Skip
Tape 1	[1]/OFF	—
Tape 2	[2]/ON	[2]/ON

- When a blank interval of more than 10 seconds is detected the mechanism will go into fast forward and playback will begin at the start of the next selection.
- Set the TPS/Blank Skip Switch to "[1]/OFF" to release the Blank Skip Function.

Note:

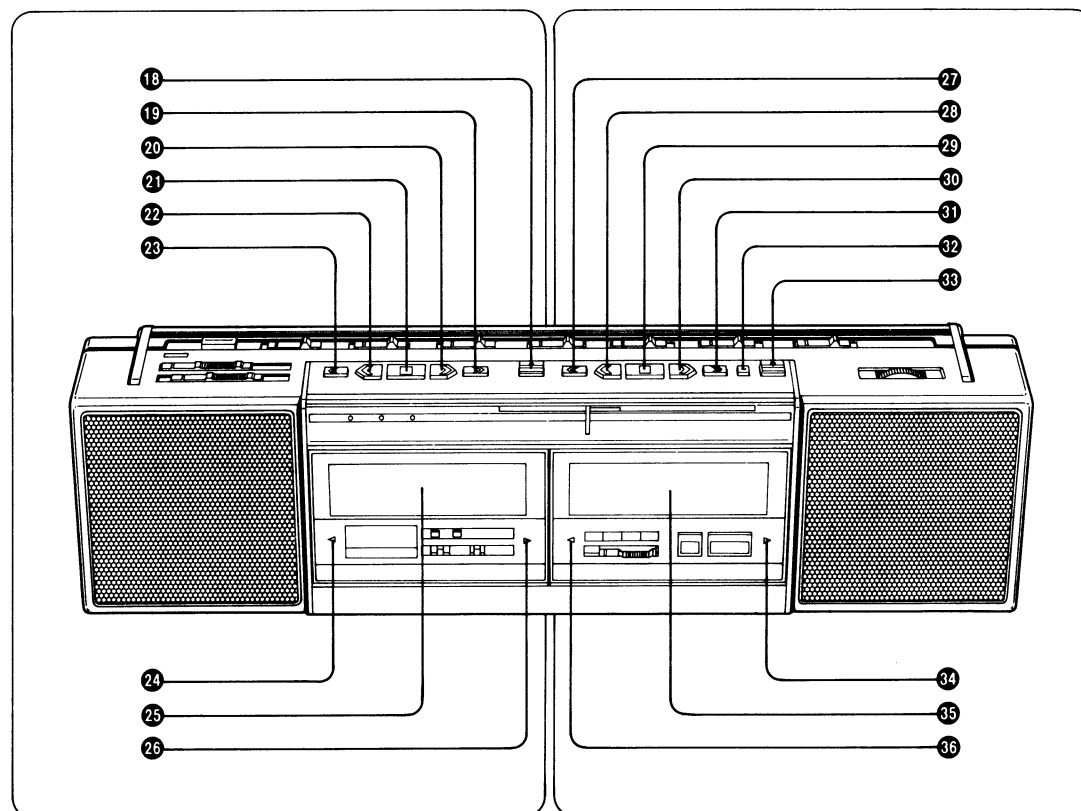
The blank skip function may not work correctly with some pre-recorded tape, such as classical music where there are many low sound levels. In this case set the TPS/Blank Skip Switch to "[1]/OFF".

LOCATION OF CONTROLS AND COMPONENTS



- 1 Built-in Microphone (MIC)
- 2 Power Switch (POWER)
- 3 Tone Control (TONE)
- 4 Volume Control (VOLUME)
- 5 Timer Stand By Switch (TIMER STAND BY)
- 6 TPS/Blank Skip Switch (TPS/BLANK SKIP)
- 7 Tape Selectors (TAPE SELECTOR)
- 8 Function Selector (SELECTOR)
- 9 Mode Selector/Beat Proof Switch (MODE/BEAT PROOF)

- 10 Band Selector (BAND)
- 11 Tuning Control (TUNING)
- 12 Speakers 10 cm (2.7Ω)
- 13 One Touch Dubbing Buttons (ONE TOUCH DUBBING)
- 14 Reverse Mode Selector (REVERSE MODE)
- 15 Record Indicator (RECORD)
- 16 FM Stereo Indicator (FM STEREO)
- 17 Power/Battery Check Indicator (POWER/BATT)

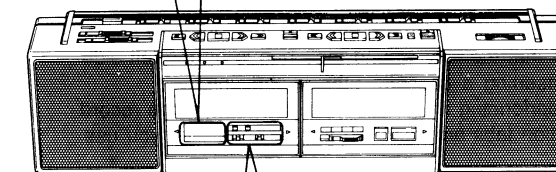
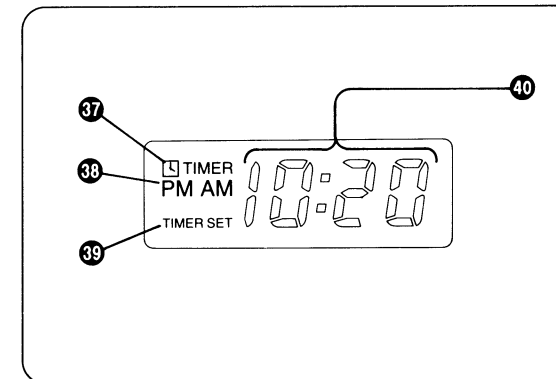


TAPE 1 CONTROLS

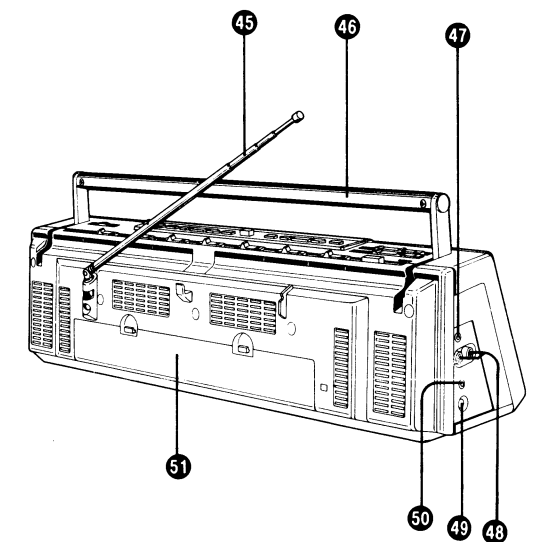
- 18 Eject Button (EJECT)
- 19 Fast Button (FAST TPS)
- 20 Playback Button (PLAY) [Forward]
- 21 Stop/Dubbing Stop Button (STOP/DUBBING STOP)
- 22 Playback Button (PLAY) [Reverse]
- 23 Fast Button (FAST TPS)
- 24 Reverse Indicator (REV)
- 25 Cassette Compartment
- 26 Forward Indicator (FWD)

TAPE 2 CONTROLS

- 27 Fast Button (FAST TPS)
- 28 Playback Button (PLAY) [Reverse]
- 29 Stop Button (STOP)
- 30 Playback Button (PLAY) [Forward]
- 31 Fast Button (FAST TPS)
- 32 Record Stand By Button (REC STAND BY)
- 33 Eject Button (EJECT)
- 34 Forward Indicator (FWD)
- 35 Cassette Compartment
- 36 Reverse Indicator (REV)



- 37 Timer Indicator (TIMER)
- 38 PM-AM Indicators (PM-AM)
- 39 Timer Set Indicator (TIMER SET)
- 40 Clock Display
- 41 Hour Set Button (HOUR)
- 42 Minute Set Button (MIN)
- 43 Timer Switch (TIMER)
- 44 Time Set Selector (TIME SET)



BATTERY SERVICE LIFE

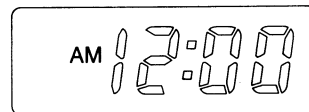
UM-2 (C-size) Batteries
 Approx. 13 hours of recording (EIAJ)
 Approx. 9.5 hours of playback (EIAJ) with volume set at 8.5 position
 The above battery service life is measured according to the conditions set forth by EIAJ (Electronic Industries Association of Japan). As the battery service life varies with the method of operation and environmental conditions, use these values as reference.

- 45 Telescopic Antenna
- 46 Handle
- 47 Microphone Jack (EXT MIC)
0.4 mV/220~600Ω
- 48 Line Input Jacks (LINE IN)
200 mV/40 kΩ
- 49 DC Input Jack (DC IN 9 V)
- 50 Headphones Jack (PHONES)
M3, Ø3.5, 32Ω
- 51 Battery Compartment

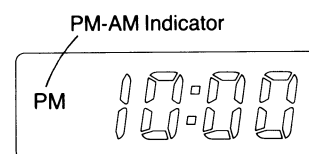
OPERATING INSTRUCTION OF CLOCK

TO SET THE CORRECT TIME

1. Insert an "AA" size battery into the Battery Compartment.
●The Clock Display will display "AM 12:00".



2. Set the Time Set Selector to "CLOCK".
3. Press and hold the Hour Set Button until the correct hour appears on the Clock Display.
●Observe the PM-AM Indicators.



4. Press and hold the Minute Set Button until the correct minute appears on the Clock Display.
●Note that the minute "00" display appears following "59", but the hour display is not changed.
5. Set the Time Set Selector to "LOCK".
●In this position even if the Hour (Minute) Button is mistakenly pressed, the Clock Display will not be changed.

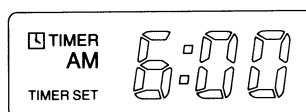
The correct time can usually be obtained by listening for time checks on the radio or from telephone time services.

USING THE TIMER

■ Using as an Alarm Unit

EX1) Waking up at 6:00 AM with the tape (Timer Playback)

1. Confirm the present time.
2. Set the Time Set Selector to "TIMER".
●The Time Set Indicator will appear.
3. Press the Hour Set Button and Minute Set Button to set to "AM 6:00".
4. Set the Timer Switch to "ON".
●The Timer Indicator will appear.



5. Set the Time Set Selector to "LOCK".
●The Clock Display will be changed to the present time.
6. Insert the cassette tape in Tape 2.
Set the desired playback mode and then set to the stop mode.
7. Set the Power Switch to "OFF/TIMER".
8. Set the Timer Stand By Switch to "PLAY".
9. At the pre-set time, the forward playback will start in Tape 2. After about 59 minutes, the power will be turned off automatically.
●If you want to cancel the timer operation, press the Tape 2 Stop Button to stop the tape travel, and set the Timer Switch to "OFF".

EX2) Waking up at 6:00 AM with the radio

1. Follow the procedure described in steps 1-5 of "EX1".
2. Receive the desired broadcast.
3. Set the Power Switch to "OFF/TIMER".
4. Set the Timer Stand By Switch to "OFF".
5. At the pre-set time, the broadcast will be received. After about 59 minutes, the power will be turned off automatically.
●If you want to cancel the timer, set the Timer Switch to "OFF".

■ Timer Recording (TAPE 2)

- When using the timer recording, be sure to insert the cassette into Tape 2. The timer recording does not function in Tape 1.
- The timer recording (playback) functions are designed to automatically start from the forward direction. As a result, be sure that the fully wound tape hub is on the left side when inserting a cassette tape in the unit.
- When performing timer recording, confirm that the record prevention tabs are intact on the cassette tape you use.

1. Follow the procedure described in steps 1-5 of "EX1".
2. Receive the desired broadcast.
3. Set the Power Switch to "OFF/TIMER".
4. Set the Timer Stand By Switch to "RECORD".
5. At the pre-set time, the forward recording will be started. After about 59 minutes (if the used tape has more than 59 minutes long recording possibility, after tape travel reaches its end), the power will be turned off automatically.
●If you want to cancel the Timer Recording, press the Tape 2 Stop Button and set the Timer Switch to "OFF".

Notes:

- Note that it takes a few seconds for tape travel to start after power is applied with Timer Recording/Playback.
- After setting the time for the timer and the Time Set Selector if it is not set to "LOCK", during timer operations you can press the Hour Set Button and Minute Set Button by mistake, and the operation may stop.
- Following use, be sure to set the Timer Stand By Switch to "OFF". When the Timer Stand By Switch is left on "RECORD", if a tape with intact record prevention tabs is inserted in the unit and the Power Switch is set to "ON", the unit will enter the recording mode, and the tape's contents may be erased by mistake.
- After timer recording, remove the recorded cassette. If not, the timer recording will function again on the next day at the same pre-set time.

DISASSEMBLY INSTRUCTIONS

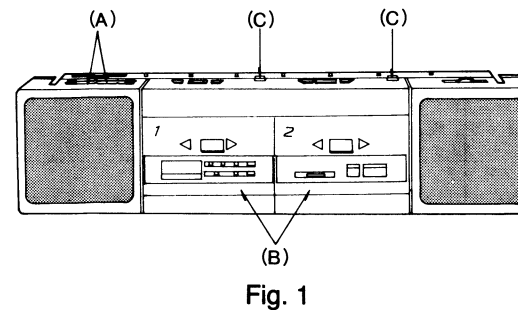


Fig. 1

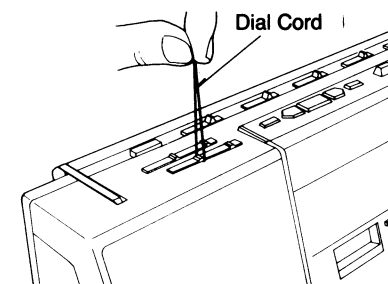


Fig. 2

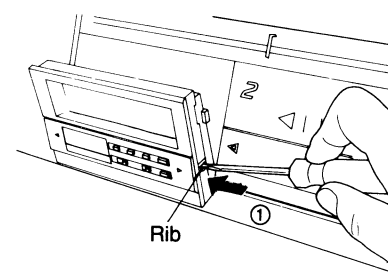


Fig. 3

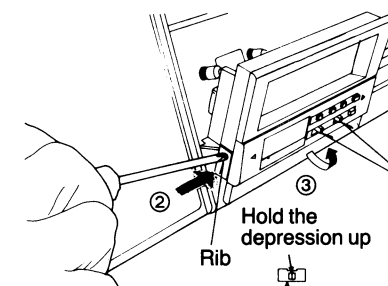


Fig. 4

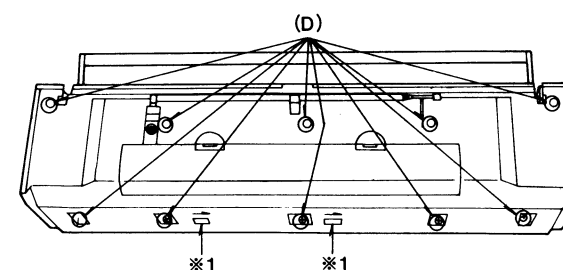


Fig. 5

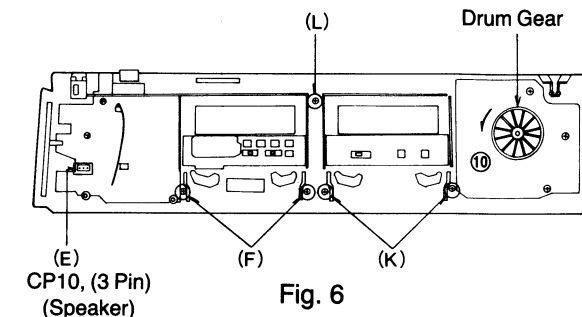


Fig. 6

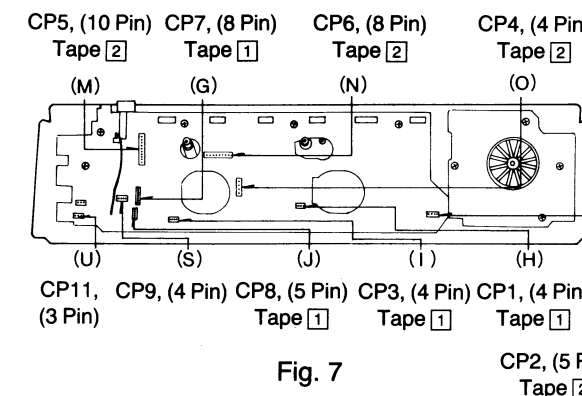


Fig. 7

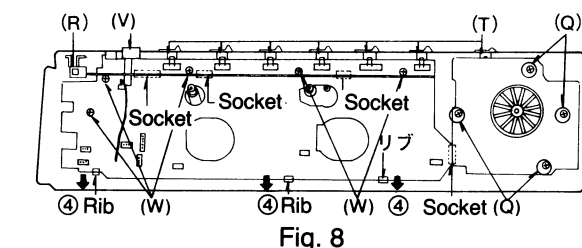


Fig. 8

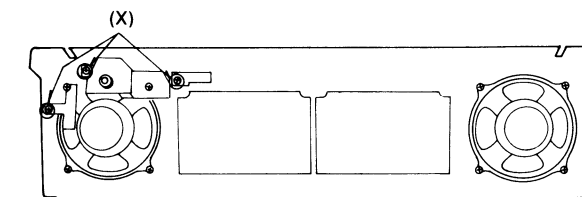


Fig. 9

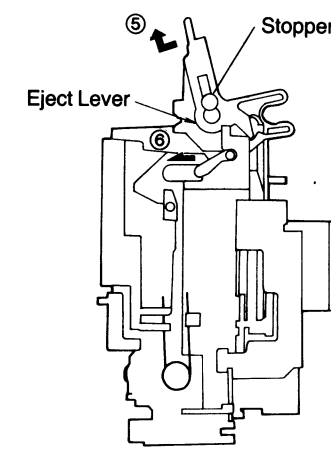


Fig. 10

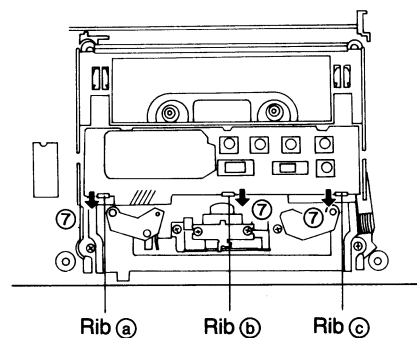


Fig. 11

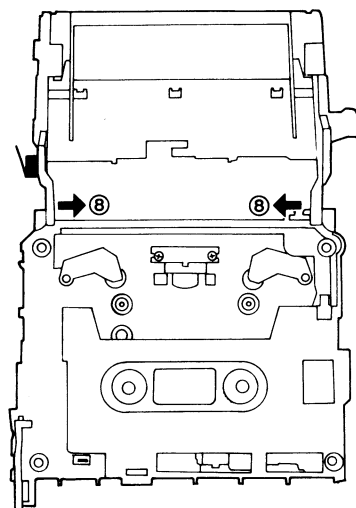


Fig. 12

Ref No.	Shown in Fig.—	To remove.—	Remove.—
1	1	Front Cabinet	Knob (A)×2
	2		Remove the knob by used dial cord.
2	1		Cassette lid (Tape 1, 2) (B)×2
	3, 4		Push the stop/eject button tape 1 and tape 2. Push the rib in the direction of arrows 1 and 2. Remove the cassette lid in the direction of arrow 3.
3	1		Pull out the stop/eject button (C)×2
4	5		Screw (3×35) mm (D)×10
5	6		Socket (CP10) (E)×1
6	6		Screw (3×12) mm (F)×2
7	7		Socket (CP7) (G)×1
8	7		Socket (CP1) (H)×1
9	7		Socket (CP3) (I)×1
10	7		Socket (CP8) (J)×1
11	6		Screw (3×12) mm (K)×2
12	6		Screw (3×20) mm (L)×1
13	7		Socket (CP5) (M)×1
14	7		Socket (CP6) (N)×1
15	7		Socket (CP4) (O)×1
16	7		Socket (CP2) (P)×1

Ref No.	Shown in Fig.—	To remove.—	Remove.—
17	8	Tuner Circuit Board	Screw (3×12) mm (Q)×4
18	8	Mechanism Control Circuit Board	Remove the angle (R)×1
19	7		Socket (CP9) (S)×1
20	8		Pull out the mechanism control circuit board
21	8	Main Circuit Board	Knob (T)×7
22	7		Socket (CP11) (U)×1
23	8		Button (V)×1
24	8		Screw (3×12) mm (W)×5
25	8		Push the rib in the direction of arrow 4 and remove the main circuit board.
26	9	Dial Chassis	Screw (3×12) mm (X)×3
27	10	Eject Lever	Pull the upper part of the lever in the direction of arrow 5 and disconnect it from the projection. Push the boss on the bottom part of the lever in the direction of arrow 6 and remove the entire lever.
28	11	LCD Block	Push rib (a) in the direction of the arrow and lift up the marked part of the LCD block circuit board. Push ribs (b) and (c) in the direction of the arrows 7 and remove the LCD block. Remove the reverse mode block in the same way.
29	12	Cassette Holder	To remove the cassette holder, squeeze the base in the directions indicated by the arrows 8 in the figure.

(※1) When the tape is caught in the pinch roller, etc. release the tape by tuning the pulley on the motor with the screwdriver in the direction of the arrow. (Fig. 5)

HOW TO REPLACE THE DIAL POINTER

To secure the dial pointer, insert it in the square hole in the front cabinet as shown in the figure, and turn it in the direction of the arrow 9.

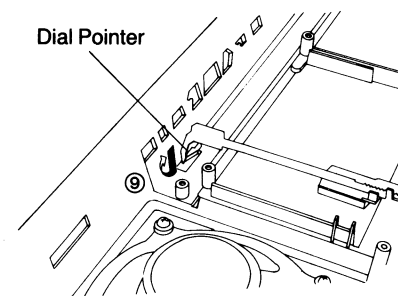


Fig. 13

Line up the rack with the rail and attach it.

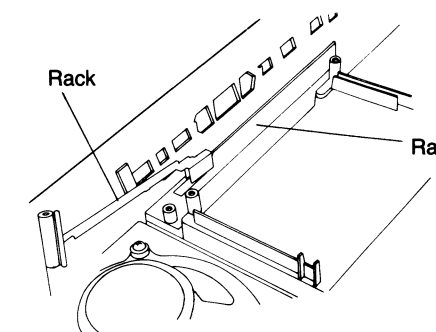


Fig. 14

SOUND		Dial Pointer
MODULATION	4	
MODULATION	88	
MODULATION	530	

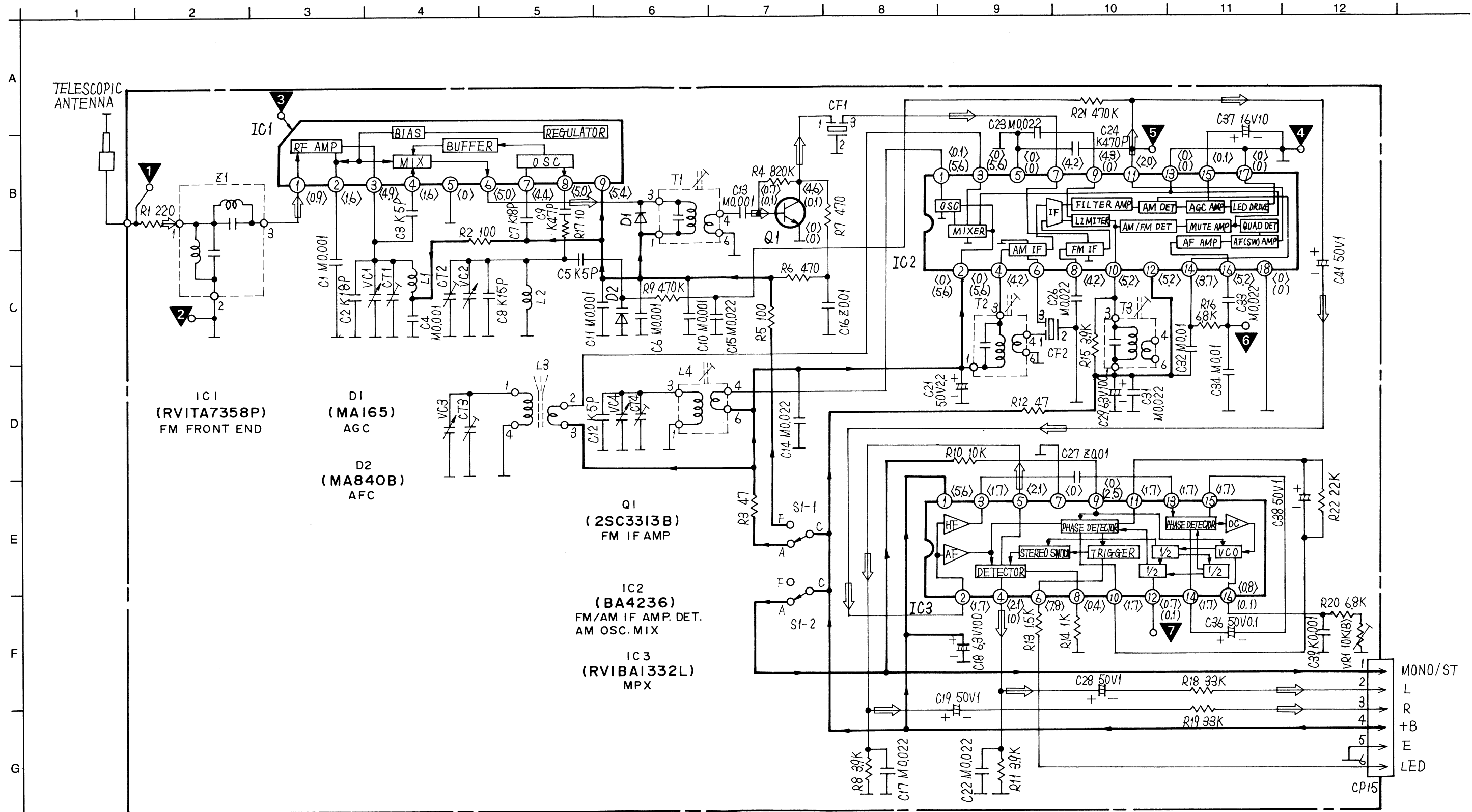
Fig. 15

When attaching the front cabinet.

1. Turn the Drum Gear all the way in the direction of the arrow 10. (See Fig. 6)
2. Attach the front cabinet after setting the dial pointer as shown in Fig. 15.

SCHEMATIC DIAGRAM (Tuner Circuit Section)

→ Radio (FM) Signal Line
 + (B) Voltage Line



Notes:

1. S1-1, S1-2: Band switch in "AM" position. (F...FM, A...AM)
2. VR1: FM VCO adjustment VR.
3. The mark (▼) shows test point. e.g. ▼ = Test point 1.

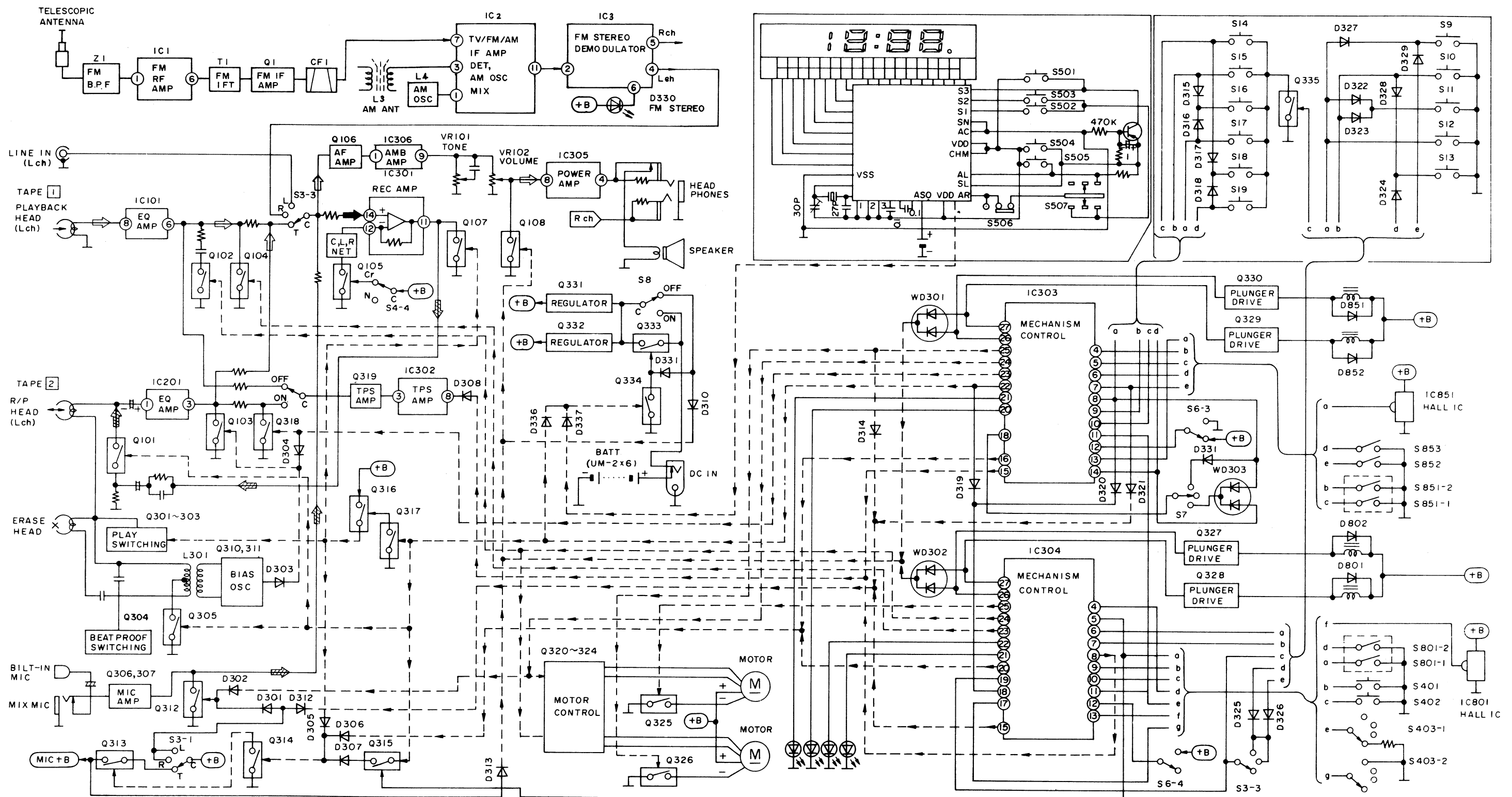
4. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
 < >...FM position, ()...AM position.
5. Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes.

One type number is used for supply parts number and production parts number which they are identical.

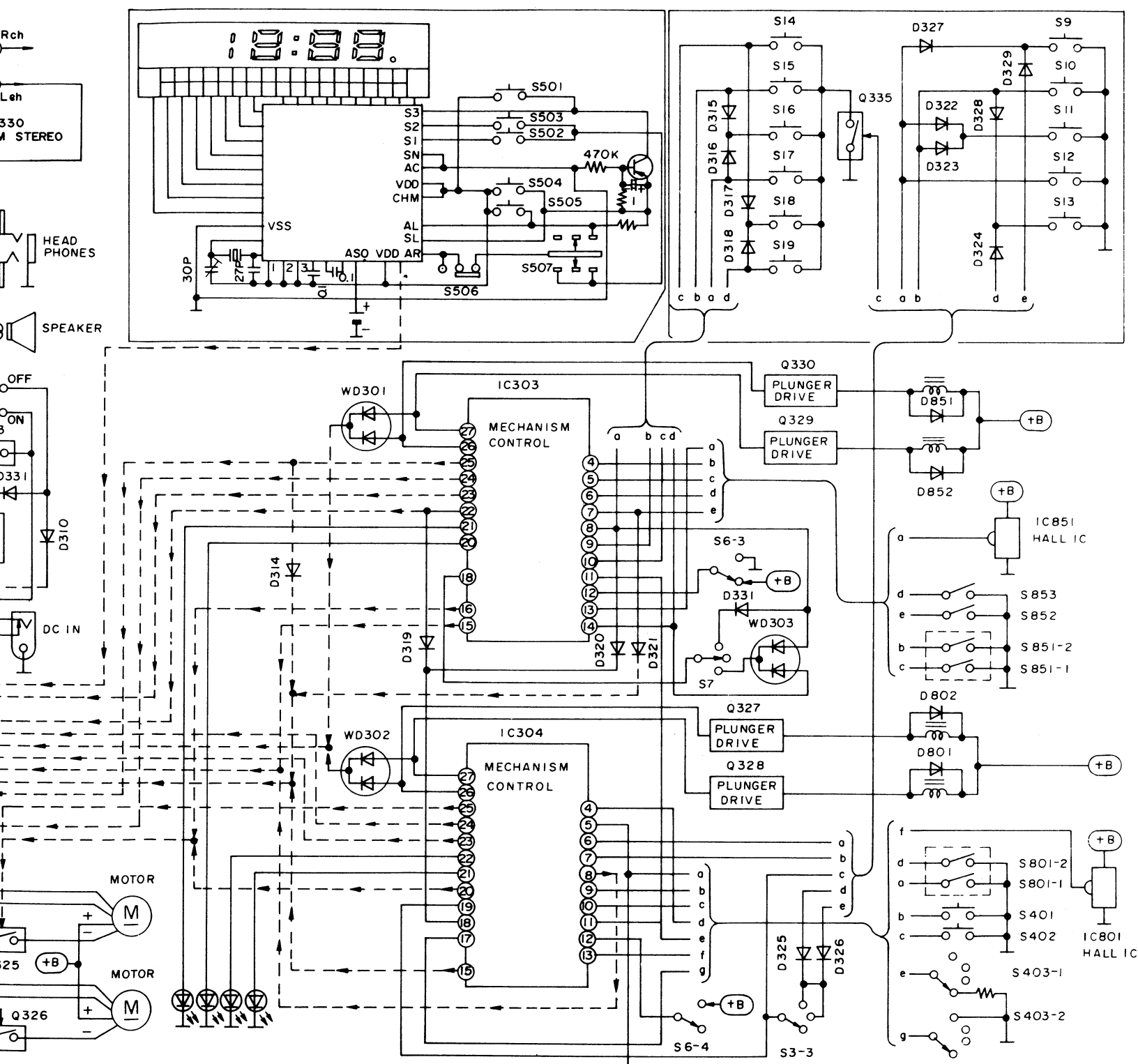
e.g. Q1
 2SC2412NRTB, LNSTB
 [2SC2412]
 Production parts number
 Supply parts number

- The supply parts number is described alone in the replacement parts list.
- This schematic diagram may be modified at any time with the development of new technology.

BLOCK DIAGRAM



BLOCK DIAGRAM



ELECTRICAL PARTS LIST (Main & Tuner Section)

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS					
IC1	RVITA7358P	Integrated Circuit (FM FRONT END)	L4	RL02B105	Coil, AM OSC
IC2	BA4236L	IC, (FM/AM IF AMP, DET, AM OSC, MIX)	L101,201 L301	RLQZB102K RL08R1	Choke Coil Oscillator Coil
IC3	RVIBA1332L	Integrated Circuit (FM MPX)	L302	RLQZB101K	Choke Coil
IC101,201	RVILA3160	Integrated Circuit (EQ/PRE AMP)	TRANSFORMERS		
IC301	MS1160AL	Integrated Circuit (AF AMP)	T1,3	RLI4B153	I.F.T (FM)
IC302	RVIBA338	Integrated Circuit (TPS)	T2	RLI2B458	I.F.T (AM)
IC303	TC9312N018	Integrated Circuit (TAPE [2] MECHANISM CONTROL)	VARIABLE CAPACITORS		
IC304	TC9312N017	Integrated Circuit (TAPE [1] MECHANISM CONTROL)	VC1,2,3,4 (CT1,2,3,4)	RCV4LC2V2K	Variable Capacitor
IC305	LA4108R	Integrated Circuit (POWER AMP)	VARIABLE RESISTORS		
IC306	RVIBA6433	Integrated Circuit	VR1	EVND4AA00B14	VCO Adjustment VR, 10 kΩ (B)
TRANSISTORS					
Q1	2SC3313B	Transistor, (FM IF AMP)	VR101,201	EWASC2C95A54	Tone, Control VR, 50 kΩ (A)
Q101,102,103,104,105,106,		Transistor (SWITCHING, REC AMP,	VR102,202	EWASE2C95A54	Volume Control VR, 50 kΩ (A)
107,108,201,202,203,204,205,		MUTING, LINE AMP, MIC AMP,	VR301,304,305	EVND4AA00B14	Rec bias, Tape Speed Adj. VR (High Speed/10 kΩ, B)
206,207,208,307,312,313,314,		PRE AMP)	VR302,303	EVND4AA00B53	Tape Speed Adj. VR (Nor. Speed 5 kΩ, B)
316,317,318,319,320,321,322,			CERAMIC FILTERS		
334,335	2SC3311R		CF1	RVF107WMZ	Ceramic Filter
Q301,302	2SC1845F	Transistor (P.B SWITCHING)	CF2	RVFSFU455B	Ceramic Filter
Q303,315	2SA1309R	Transistor (P.B SWITCHING, DUBBING SWITCHING)	THERMISTOR		
Q304,306	2SC1740SLNS	Transistor (BEAT PROOF, MIC AMP)	TH301	RRT302	Thermistor
Q305,331	2SD1302R	Transistor (REC SWITCHING, REGULATOR)	FILTER		
Q310,311	2SC2001K2	Transistor (BIAS OSC)	Z1	RXABPMB6A	B.P.F
Q323,324	2SK381CD	Transistor (SWITCHING)	SWITCHES		
Q325,326	2SD592R	Transistor (MOTOR SWITCHING)	S1,3	RSS3D21Z	Slide Switch (BAND SELECTOR FUNCTION SELECTOR)
Q327,328,329,330	2SC2001K	Transistor (PLUNGER SWITCHING)	S2	RSS3B38Z	Slide Switch (FM MODE/BEAT PROOF)
Q332	2SC1383Q	Transistor (REGULATOR)	S4,6	RSS2D24Z	Slide Switch (TAPE SELECTOR/ TAPE [2], TPS/BLANK SKIP)
Q333	2SB930P	Transistor (TIMER SWITCHING)	S5	RSS2B57Z	Slide Switch (TAPE SELECTOR/ TAPE [1])
DIODES & RECTIFIERS					
D1	MA165	Diode (AGC)	S7	RSS3A15Z	Slide Switch (Timer)
D2	MA840B	Diode (AFC)	S8	RSH2B38Z	Push Switch (POWER)
D301,302,303,304,305,306,		Diode (PROTECTOR, SWITCHING,	S9,12,13,14,15,16,17,18,19	EVQQS405K	Slide Switch [TAPE [1] FF (REV), PLAY (FWD), FF (FWD), TAPE [2] FF (REV), PLAY (REV), STOP, PLAY (FWD), FF (FWD), REC STAND BY]
307,308,310,311,312,313,314, 315,316,317,318,319,320,321, 322,323,324,325,326,327,328, 329,331,336	MA165	MIC MUTING, KEY MATRIX, MATRIX)	S10,11	RSH1A61Z	Push Switch [PLAY (REV), STOP (TAPE [1])
D330,332, 333	LN032279PH	Diode (FM ST)	S801,851	RSH1B12Z	Push Switch
D334	MA4056M	Diode (ZENNER)	S852,853	RSH1A46Z	Push Switch (TAPE [2])
D335	MA4068M	Diode (ZENNER)	JACKS		
D337	MA700	Diode (PROTECTOR)	J1	RJJ1D20Y	Jack, Mic
WD301,302,303	MA175WK	Diode (PLUNGER MUTING, TIMER STAND BY)	J2,3	RJJ1096Z	Jack, Line IN
COILS					
L2	RLD4Y53	Coil, FM OSC.	J4	RJJ1D27Z	Jack, Headphones
L3	RLF2V53	Coil, AM ANT	J5	RJJ97Y	Jack, DC IN

SCHEMATIC DIAGRAM (MAIN SECTION)

BLOCK DIAGRAM

Notes:

1. S2-1, S2-2:

2. S3-1~S3-4:

3. S4-1~S4-4:

4. S5-1, S5-2:

5. S6-1~S6-4:

6. S7:

7. S8:

8. S9:

9. S10:

10. S11:

11. S12:

12. S13:

13. S14:

14. S15:

15. S16:

16. S17:

17. S18:

18. S19:

19. S401:

20. S402:

21. S403-1,

S403-2:

22. S502:

23. S503:

24. S506:

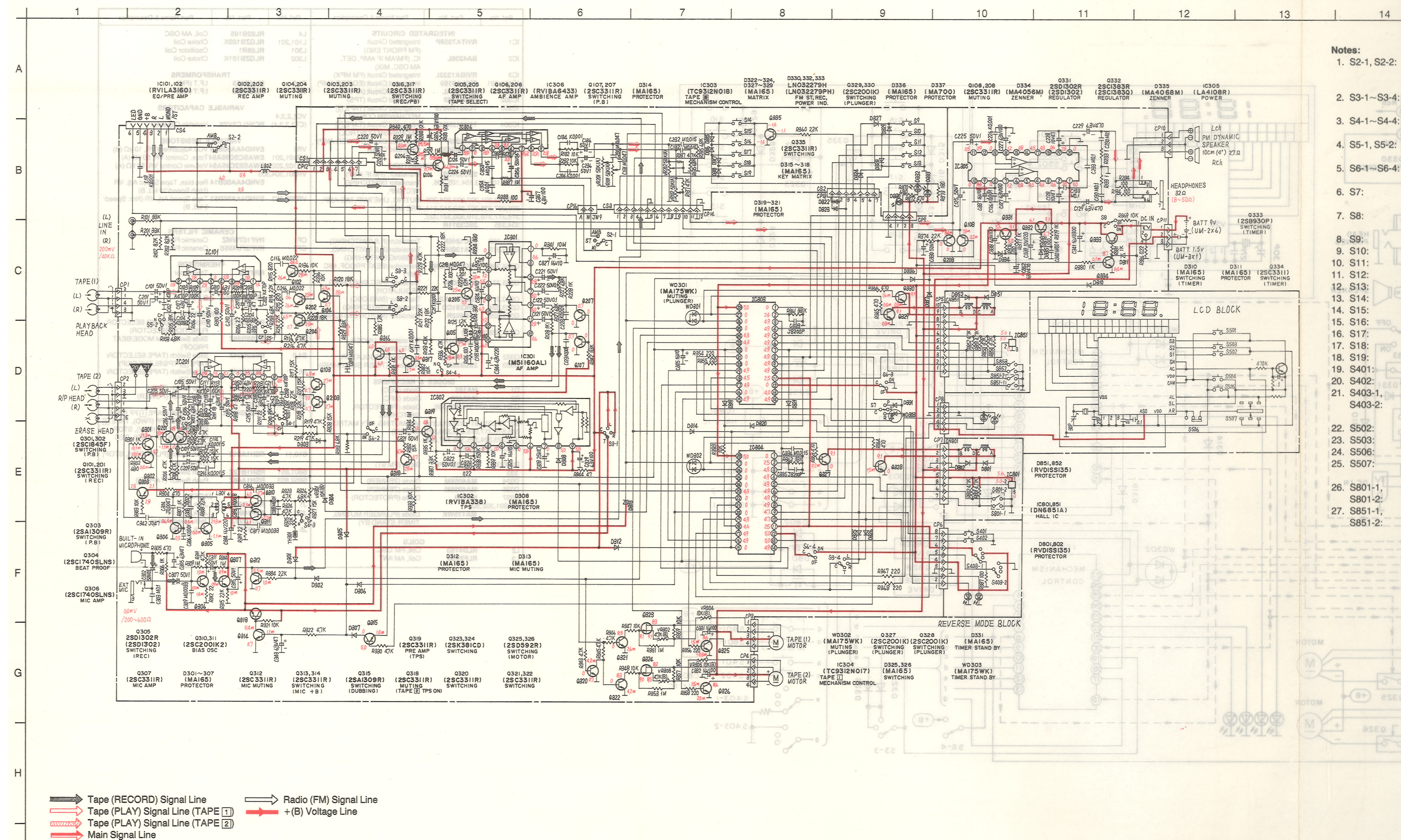
25. S507:

26. S801-1,

S801-2:

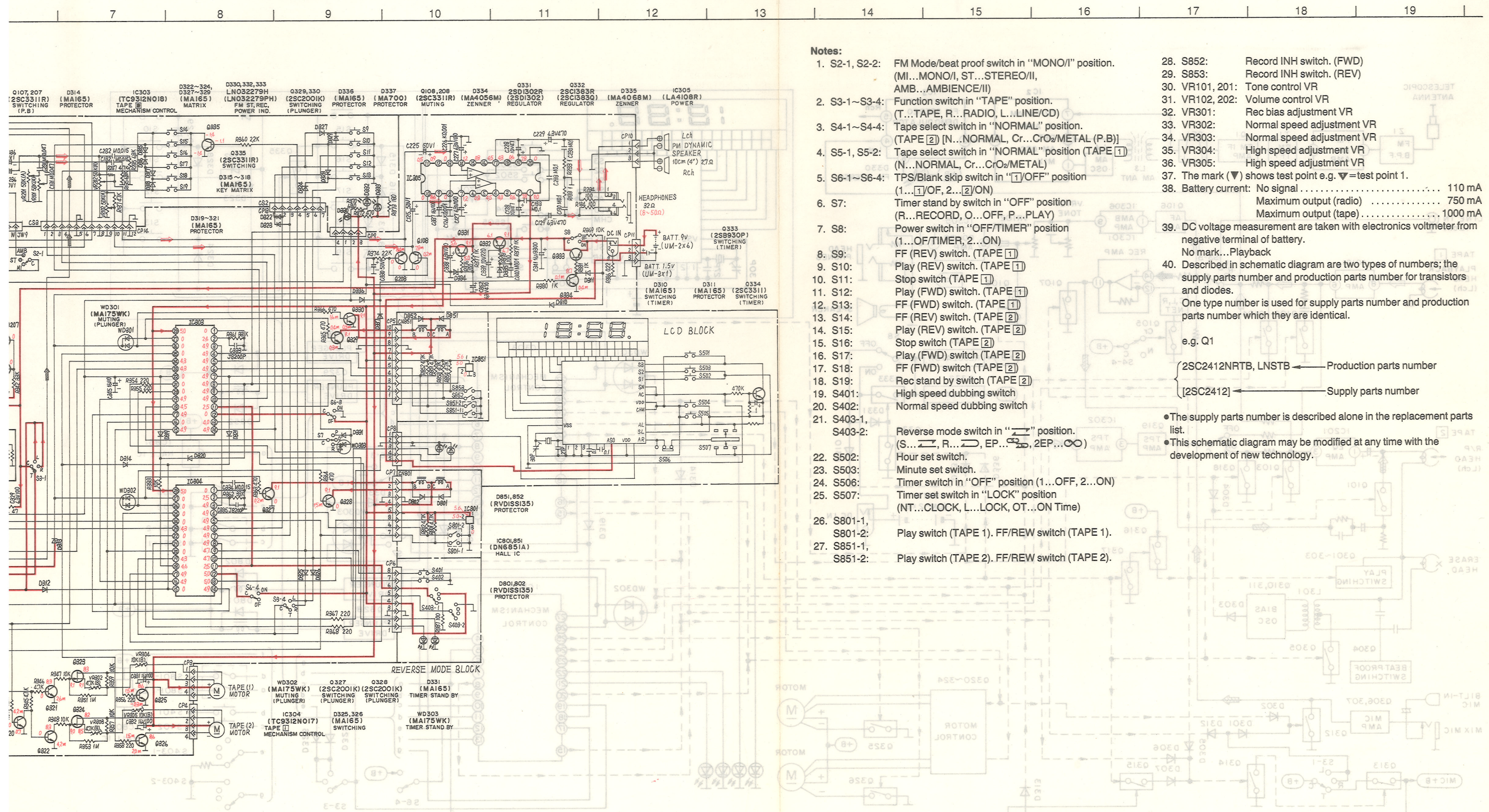
27. S851-1,

S851-2:



SCHEMATIC DIAGRAM (MAIN SECTION)

BLOCK DIAGRAM



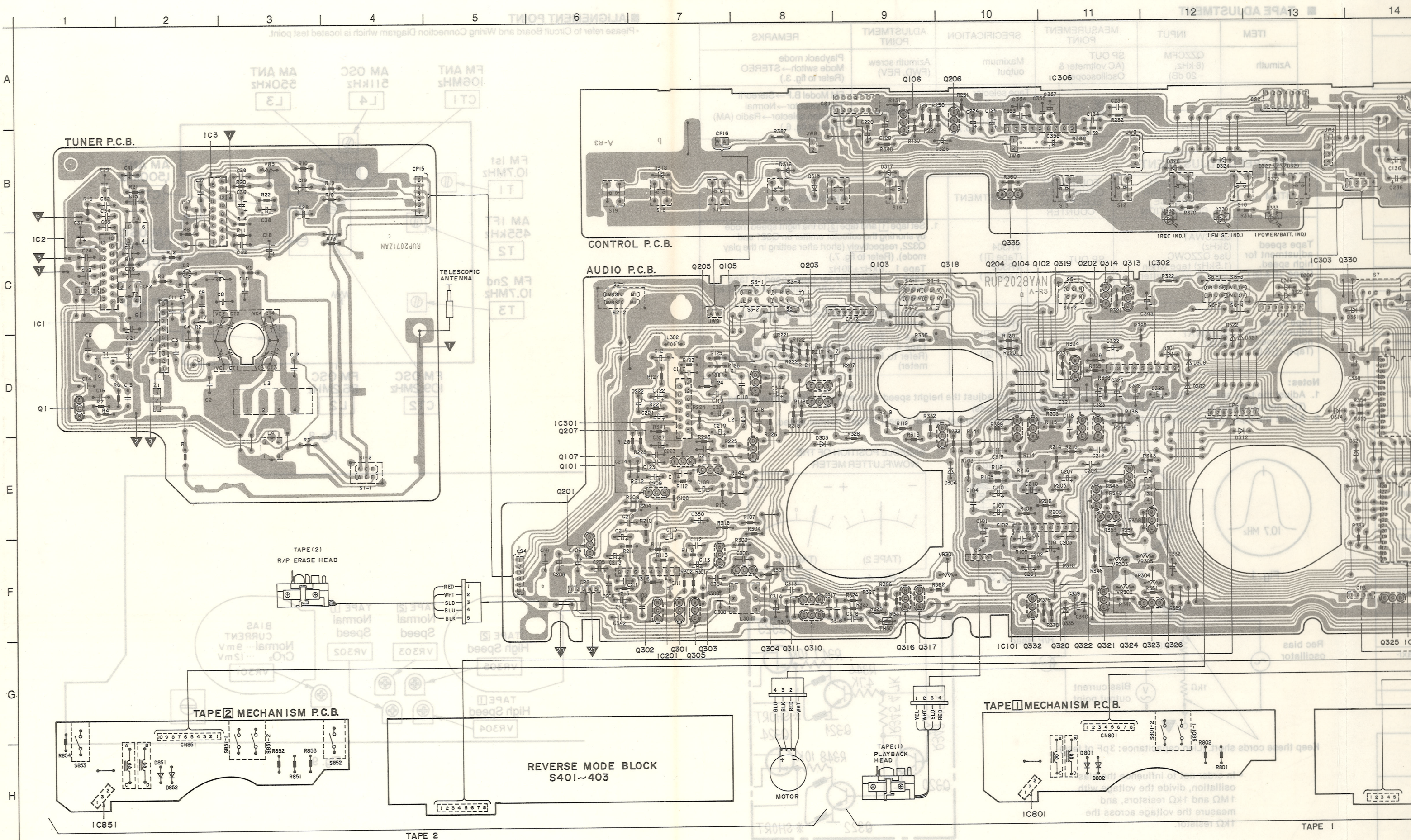
Notes:

1. S2-1, S2-2: FM Mode/beat proof switch in "MONO/I" position.
(M...MONO/I, ST...STEREO/II, AMB...AMBIENCE/II)
 2. S3-1~S3-4: Function switch in "TAPE" position.
(T...TAPE, R...RADIO, L...LINE/CD)
 3. S4-1~S4-4: Tape select switch in "NORMAL" position.
(TAPE 2) [N...NORMAL, Cr...CrO₂/METAL (P.B)]
 4. S5-1, S5-2: Tape select switch in "NORMAL" position (TAPE 1)
(N...NORMAL, Cr...CrO₂/METAL)
 5. S6-1~S6-4: TPS/Blank skip switch in "1/OFF" position
(1...1/OFF, 2...2/ON)
 6. S7: Timer stand by switch in "OFF" position
(R...RECORD, O...OFF, P...PLAY)
 7. S8: Power switch in "OFF/TIMER" position
(1...OFF/TIMER, 2...ON)
 8. S9: FF (REV) switch. (TAPE 1)
 9. S10: Play (REV) switch. (TAPE 1)
 10. S11: Stop switch (TAPE 1)
 11. S12: Play (FWD) switch. (TAPE 1)
 12. S13: FF (FWD) switch. (TAPE 1)
 13. S14: FF (REV) switch. (TAPE 2)
 14. S15: Play (REV) switch. (TAPE 2)
 15. S16: Stop switch (TAPE 2)
 16. S17: Play (FWD) switch (TAPE 2)
 17. S18: FF (FWD) switch (TAPE 2)
 18. S19: Rec stand by switch (TAPE 2)
 19. S401: High speed dubbing switch
 20. S402: Normal speed dubbing switch
 21. S403-1, S403-2: Reverse mode switch in "1" position.
(S...1, R...2, EP...3, 2EP...4)
 22. S502: Hour set switch.
 23. S503: Minute set switch.
 24. S506: Timer switch in "OFF" position (1...OFF, 2...ON)
 25. S507: Timer set switch in "LOCK" position
(NT...CLOCK, L...LOCK, OT...ON Time)
 26. S801-1, S801-2: Play switch (TAPE 1). FF/REW switch (TAPE 1).
 27. S851-1, S851-2: Play switch (TAPE 2). FF/REW switch (TAPE 2).
 28. S852: Record INH switch. (FWD)
 29. S853: Record INH switch. (REV)
 30. VR101, 201: Tone control VR
 31. VR102, 202: Volume control VR
 32. VR301: Rec bias adjustment VR
 33. VR302: Normal speed adjustment VR
 34. VR303: Normal speed adjustment VR
 35. VR304: High speed adjustment VR
 36. VR305: High speed adjustment VR
 37. The mark (▼) shows test point e.g. ▼=test point 1.
 38. Battery current: No signal 110 mA
Maximum output (radio) 750 mA
Maximum output (tape) 1000 mA
 39. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
No mark...Playback
 40. Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes.
One type number is used for supply parts number and production parts number which they are identical.
e.g. Q1

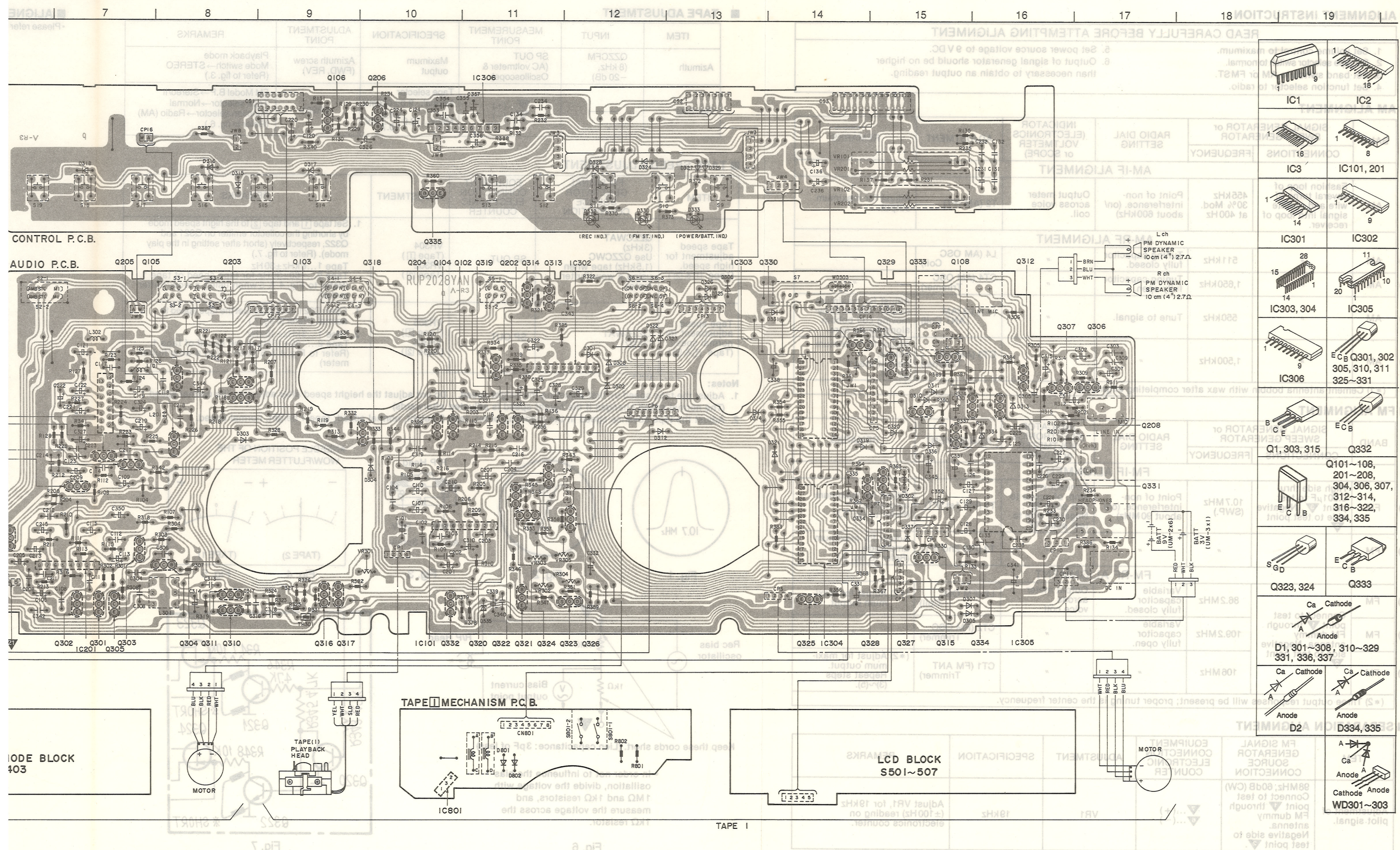
2SC2412NRTB, LNSTB	← Production parts number
[2SC2412]	← Supply parts number
 - The supply parts number is described alone in the replacement parts list.
 - This schematic diagram may be modified at any time with the development of new technology.

- The supply parts number is described alone in the replacement parts list.
- This schematic diagram may be modified at any time with the development of new technology.

CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set tape selector switch to normal.
3. Set band switch to AM or FMST.
4. Set function selector to radio.
5. Set power source voltage to 9 VDC.
6. Output of signal generator should be no higher than necessary to obtain an output reading.

■ AM ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
AM-IF ALIGNMENT						
(1)	AM	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455kHz 30% Mod. at 400Hz	Point of non-interference. (on/ about 600kHz)	Output meter across voice coil.	T2 (AM IFT) Adjust for maximum output.
AM-RF ALIGNMENT						
(2)	AM	"	511 kHz	Tuning capacitor fully closed.	"	L4 (AM OSC Coil) "
(3)	AM	"	1,650kHz	Tuning capacitor fully open.	"	CT4 (AM OSC Trimmer) "
(4)	AM	"	550 kHz	Tune to signal.	"	(*1) L3 (AM ANT Coil) Adjust for maximum output. Adjust L3 by moving coil bobbin along ferrite core.
(5)	AM	"	1,500kHz	"	"	CT3 (AM ANT Trimmer) Adjust for maximum output. Repeat steps (2)~(5).
(*1) Cement antenna bobbin with wax after completing alignment.						

(*1) Cement antenna bobbin with wax after completing alignment.

■ FM ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS	
	CONNECTIONS	FREQUENCY					
FM-IF ALIGNMENT							
(1)	FM	High side thru. 0.001 μ F to test point ∇ . Negative side to test point ∇ .	10.7 MHz (SWP.)	Point of non-interference. (on/ about 90 MHz)	Connect vert. amp. of scope to test point ∇ . Negative side to test point ∇ .	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 1.)
(2)	FM	"	"	"	"	T3 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 2.)
FM-RF ALIGNMENT							
(3)	FM	Connect to test point ∇ through FM dummy antenna. Negative side to test point ∇ .	86.2 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L2 (FM OSC Coil)	(*2) Adjust for maximum output.
(4)	FM		109.2 MHz	Variable capacitor fully open.	"	CT2 (FM OSC Trimmer)	"
(5)	FM		106 MHz	"	"	CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (3)~(5).
(*2) Three output responses will be present; proper tuning is the center frequency.							

(*2) Three output responses will be present; proper tuning is the center frequency.

■ SEPARATION ALIGNMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	98MHz, 60dB (CW) Connect to test point ▼ through FM dummy antenna. Negative side to test point ▼.	▼...(+) ▼...(-)	VR1	19kHz	Adjust VR1, for 19kHz (±100Hz) reading on electronics counter.

■ TAPE ADJUSTMENT

ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Azimuth	QZZCFM (8 kHz, -20 dB)	SP OUT (AC voltmeter & Oscilloscope)	Maximum output	Azimuth screw (FWD, REV)	Playback mode Mode switch→STEREO (Refer to fig. 3.)
Rec Bias	—	▼...(+) ▼...(-)	Tape selector Normal...9.0±0.3 mV Metal...12.0 ^{+1.3} _{-0.7} mV	VR301	FM Model B.P→Stereo/II Tape selector→Normal Function selector→Radio (AM) (Refer to fig. 6.)

■ TAPE SPEED ADJUSTMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	REMARKS
Tape speed adjustment for high speed. (Tape ① & ②)	QZZCWAT (3kHz) Use QZZCWC (1.5kHz) tape when using a wow/flutter meter.	SP OUT	VR304 (Tape ①) VR302 (Tape ②)	1. Set tape ① and tape ② to the high speed mode by shorting the collector emitter on Q321 and Q322, respectively (short after setting in the play mode). (Refer to fig. 7.) Tape 1...6kHz±30Hz Tape 2...-60±30Hz for tape speed of tape 1. (Refer to Fig. 4 & 5 when using a wow/flutter meter)
Tape speed adjustment for normal speed. (Tape ① & ②)	QZZCWAT (3kHz)	SP OUT	VR305 (Tape ①) VR303 (Tape ②)	1. Open Q321 and Q322. Set the tape speed to normal. (Refer to fig. 7.) 2. Tape 1...3kHz±15kHz Tape 2...-30±15Hz of the speed of tape 1. (Refer to Fig. 4 & 5 when using a wow/flutter meter)

Notes:

1. Adjust the tape speed by first adjusting the height speed. Do not adjust the height speed after adjusting the normal speed. (The normal speed changes if the height speed is adjusted afterwards)
2. Adjust the tape advance speed in the following order: tape 2 height, normal speed; tape 1 height, normal speed.

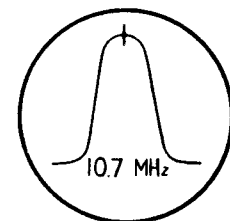


Fig. 1

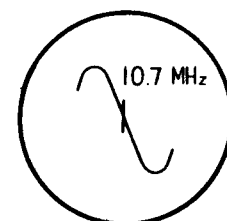


Fig. 2

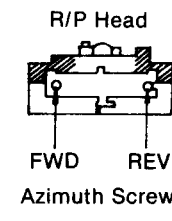


Fig. 3

NEEDLE POSITION OF THE WOW/FLUTTER METER

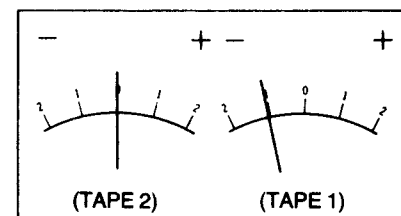
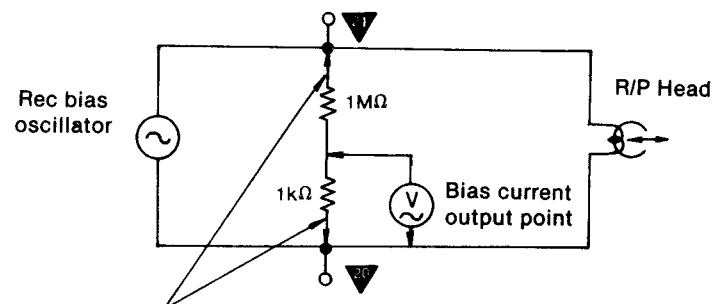


Fig. 4

Fig. 5



Keep these cords short. (Lien capacitance: 3pF of less)

- In order not to influence the bias osillation, divide the voltage with 1MΩ and 1kΩ resistors, and measure the voltage across the 1kΩ resistor.

Fig. 6

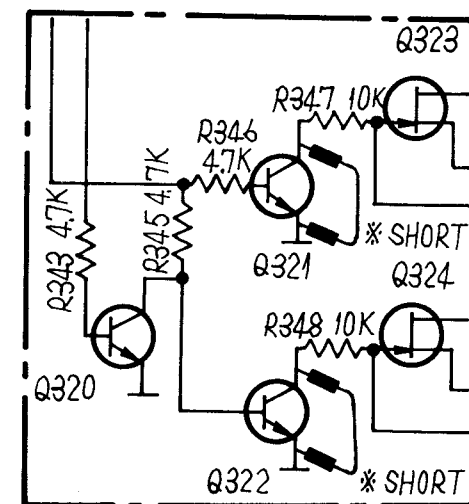


Fig. 7

■ ALIGNMENT

•Please refer to

■ TAPE ADJUSTMENT

ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Azimuth	QZZCFM (8 kHz, -20 dB)	SP OUT (AC voltmeter & Oscilloscope)	Maximum output	Azimuth screw (FWD, REV)	Playback mode Mode switch→STEREO (Refer to fig. 3.)
Rec Bias	—	▼...(+) ▼...(-)	Tape selector Normal... 9.0 ± 0.3 mV Metal... $12.0 +1.3$ -0.7 mV	VR301	FM Model B.P→Stereo/II Tape selector→Normal Function selector→Radio (AM) (Refer to fig. 6.)

■ TAPE SPEED ADJUSTMENT

ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	REMARKS
Tape speed adjustment for high speed. (Tape 1 & 2)	QZZCWAT (3kHz) Use QZZCWC (1.5kHz) tape when using a wow/flutter meter.	SP OUT	VR304 (Tape 1) VR302 (Tape 2)	1. Set tape 1 and tape 2 to the high speed mode by shorting the collector emitter on Q321 and Q322, respectively (short after setting in the play mode). (Refer to fig. 7.) Tape 1... $6 \text{ kHz} \pm 30 \text{ Hz}$ Tape 2... $60 \pm 30 \text{ Hz}$ for tape speed of tape 1. (Refer to Fig. 4 & 5 when using a wow/flutter meter)
Tape speed adjustment for normal speed. (Tape 1 & 2)	QZZCWAT (3kHz)	SP OUT	VR305 (Tape 1) VR303 (Tape 2)	1. Open Q321 and Q322. Set the tape speed to normal. (Refer to fig. 7.) 2. Tape 1... $3 \text{ kHz} \pm 15 \text{ kHz}$ Tape 2... $30 \pm 15 \text{ Hz}$ of the speed of tape 1. (Refer to Fig. 4 & 5 when using a wow/flutter meter)

Notes:

- Adjust the tape speed by first adjusting the height speed. Do not adjust the height speed after adjusting the normal speed. (The normal speed changes if the height speed is adjusted afterwards)
- Adjust the tape advance speed in the following order: tape 2 height, normal speed; tape 1 height, normal speed.

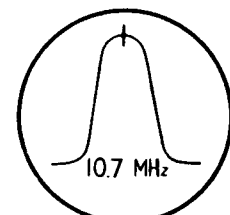


Fig. 1

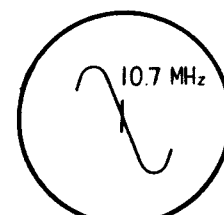


Fig. 2

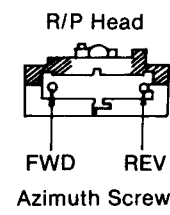


Fig. 3

• NEEDLE POSITION OF THE WOW/FLUTTER METER

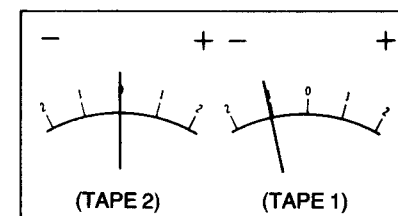
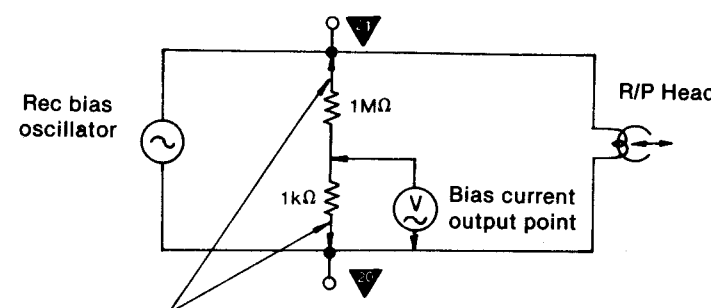


Fig. 4

Fig. 5



Keep these cords short. (Lien capacitance: 3pF of less)

- In order not to influence the bias oscillation, divide the voltage with 1MΩ and 1kΩ resistors, and measure the voltage across the 1kΩ resistor.

Fig. 6

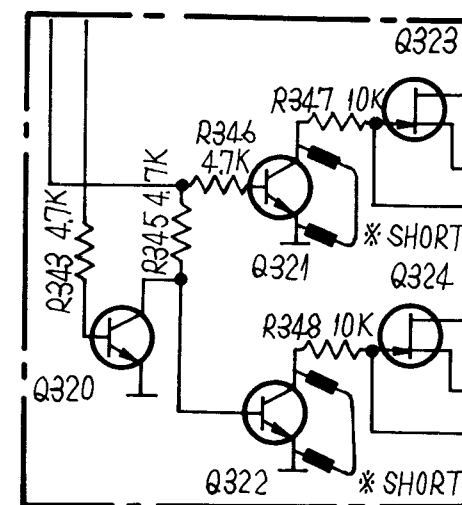


Fig. 7

■ ALIGNMENT POINT

Please refer to Circuit Board and Wiring Connection Diagram which is located test point.

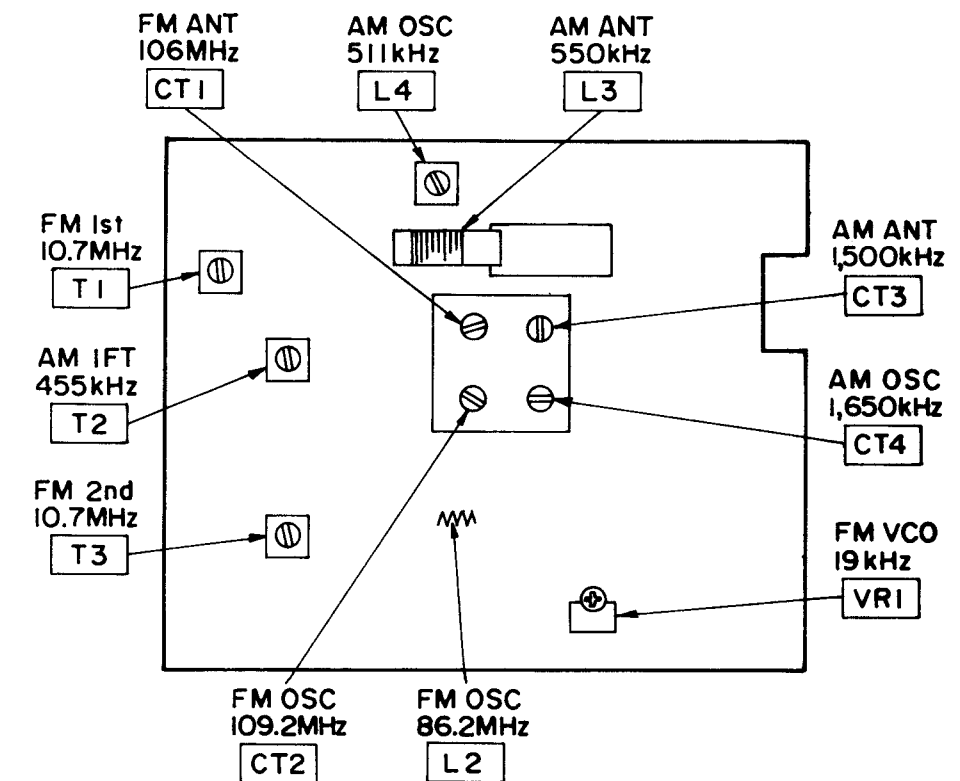


Fig. 8

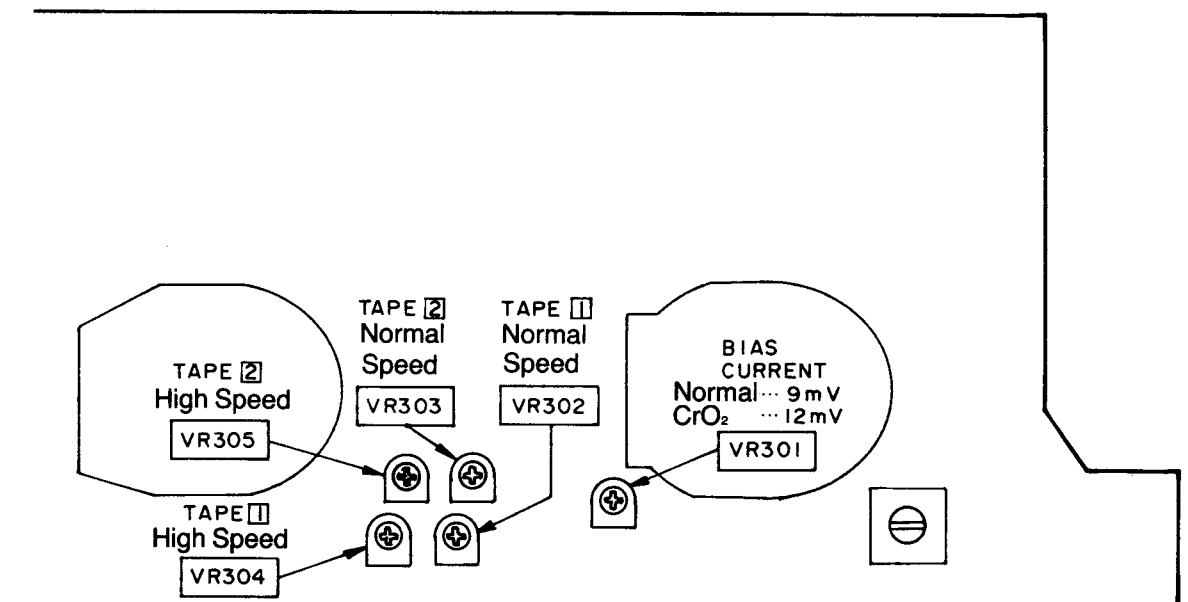


Fig. 9

EACH TERMINAL FUNCTION TC9312N017 (IC304) AND TC9312N018 (IC303)

• TC9312N017, TC9312N018 (Mechanism Control)

1) Termination

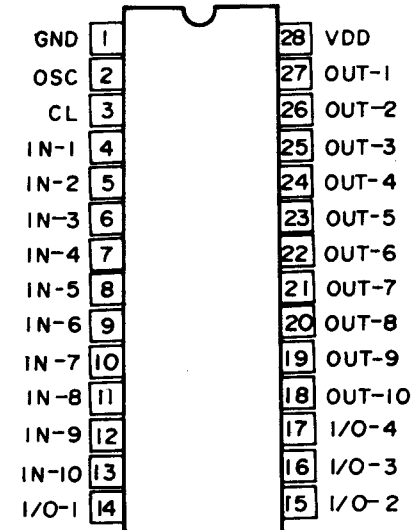


Fig. 1

M: 2.5V

Level	Blank Skip	TPS
L	○	○
M	×	○
H	×	×

Fig. 2

2) Block Diagram

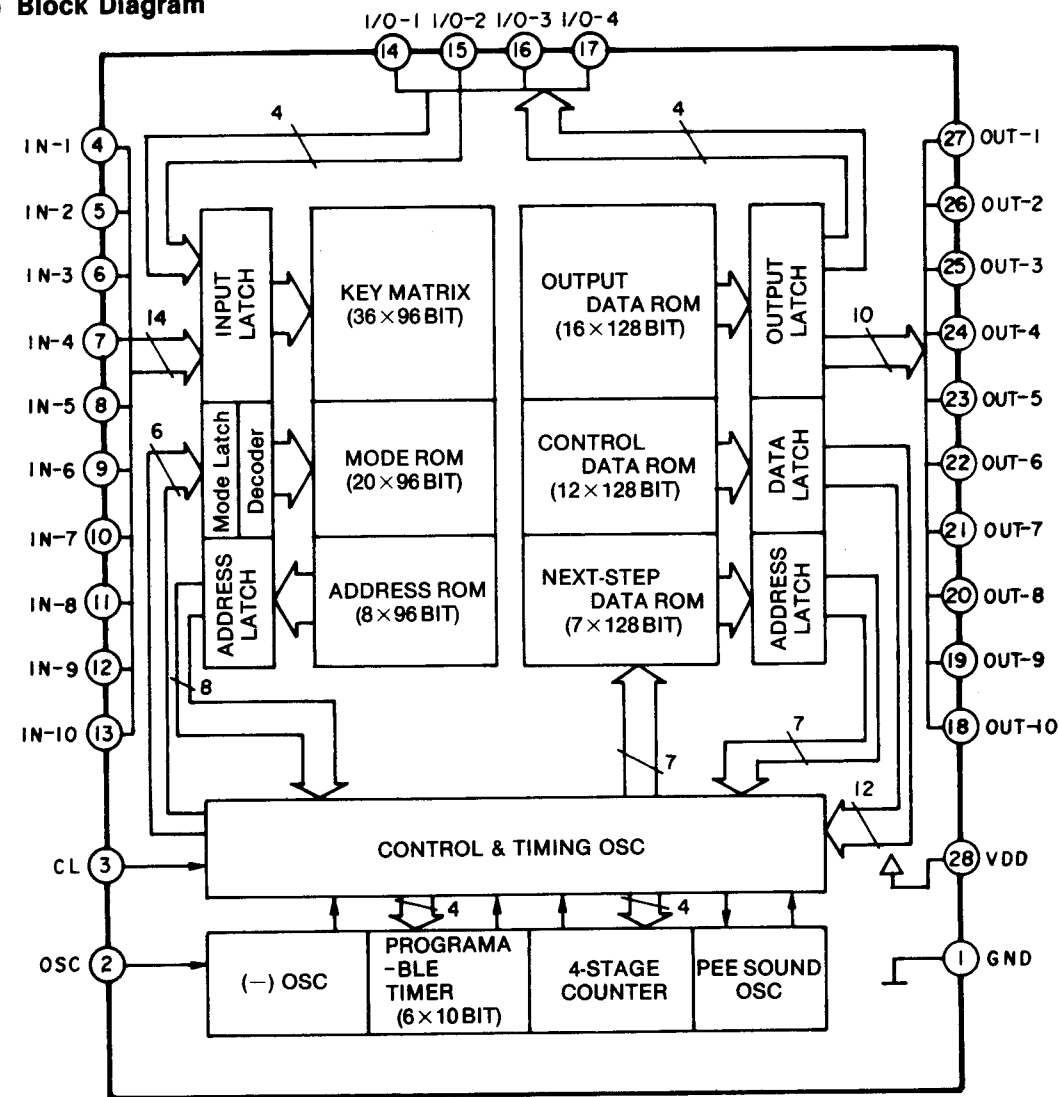
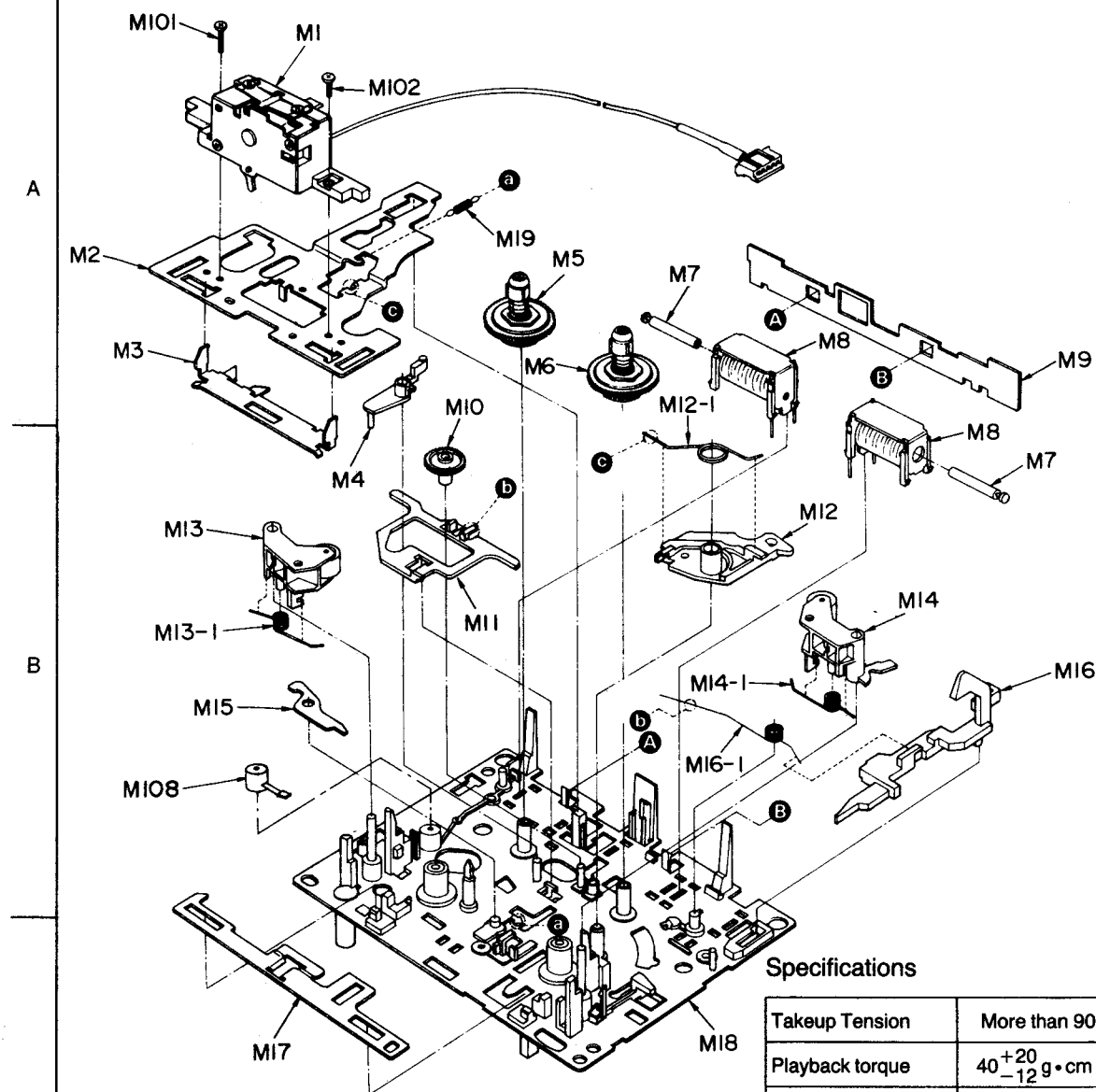


Fig. 3

Pin No.	Pin Name	Function		Description	
		IC303 (TC9312N018)	IC304 (TC9312N017)	IC304 (TC9312N018)	IC303 (TC9312N017)
1	GND	GND		Ground	
2	OSC	Clock oscillator		Approx. 64 kHz	
3	CL	Clear		Resets the operation when the power supply voltage drops (3.5V).	
4	IN-1	FF/REW		FF/REW mode switch detection: "L" during FF/REW mode.	
5	IN-2	PLAY SW		PLAY mode switch detection: "L" during PLAY and REC mode.	
6	IN-3	REV REC	Key input	REV REC mode detection: "H" during REV REC mode.	Input for FWD PLAY and REW.
7	IN-4	FWD REC	Key input	FWD REC mode detection: "H" during FWD REC mode.	Input for REV PLAY, FF and STOP.
8	IN-5	Key input	TPS input	Input for FWD PLAY and STOP.	"L" during use signal and "H" during no signal.
9	IN-6	Key input		Input for REV PLAY and STOP.	Input for High Dubbing, FF, STOP.
10	IN-7	Key input		Input for REW and FF.	Input for Dubbing, REW and Dubbing STOP.
11	IN-8	REV mode		"H": "H", "M": "M", "S": "H", "O": "M", Syncro Reverse: "H"	
12	IN-9	Mode		Blank skip/TPS (refer to Fig. 2.)	
13	IN-10	Auto-Stop		Rotation of the reel table (with ring magnets) is detected with the Hall IC (DN6851A) to determine the end of tape. Square wave output in PLAY, FF, REW, TPS.	
14	I/O-1	Key input	Key OK	Input for REC-Standby and FF.	Key INH input: Key inputs are accepted when "H".
15	I/O-2	TPS input	Dubbing OK	"L" during use signal and "H" during no signal.	Dubbing starts when "L".
16	I/O-3	Dubbing S/S	Relay	"H" when dubbing starts; "L" (momentary) during synchro-reverse.	Tape 1 starts when the relay play input is "L".
17	I/O-4	Key-INH.	Relay SW	Inhibits the key input for tape 1. "L" when tape 2 starts operating.	Relay play switch. Relay play when "L".
18	OUT-10	Timer	Relay	Mode setting for the timer standby.	"L" when relay play from tape 1 to tape 2.
19	OUT-9	Relay	Key-INH.	"L" when relay play from tape 2 to tape 1.	Inhibits the key input for tape 2. ("L" when tape 1 starts operating)
20	OUT-8	REV LED	Dubbing S/S	"L" during FWD PLAY; "H" during REV PLAY. Alternates rapidly between "L" and "H" during TPS.	"H" when dubbing starts; "L" (momentary) during synchroreverse.
21	OUT-7	FWD LED		"H" during FWD PLAY; "L" during REV PLAY. Alternates rapidly between "H" and "L" during TPS.	
22		REC LED	REV LED	"H" during REC mode.	"L" during FWD PLAY; "H" during REV PLAY. Alternates rapidly between "H" and "L" during TPS.
23	OUT-5	DMT		"L" during audio muting PLAY/REC STANDBY.	
24	OUT-4	Compulsory normal	High speed	"H" during synchro-reverse or start of high speed dubbing.	"H" during high speed dubbing.
25	OUT-3	CAP Motor		"L" during STOP; otherwise "H".	
26	OUT-2	PLAY PL		Play plunger drive. Momentary "H" when switching the PLAY, REC, and TPS operations.	
27	OUT-1	FF/REW PL		FF/REW plunger drive. Momentary "H" when switching the FF, REW, and TPS operations.	
28	VDD	Power supply		Approx. 5V.	

MECHANISM PARTS LOCATION

■ TOP VIEW



Specifications

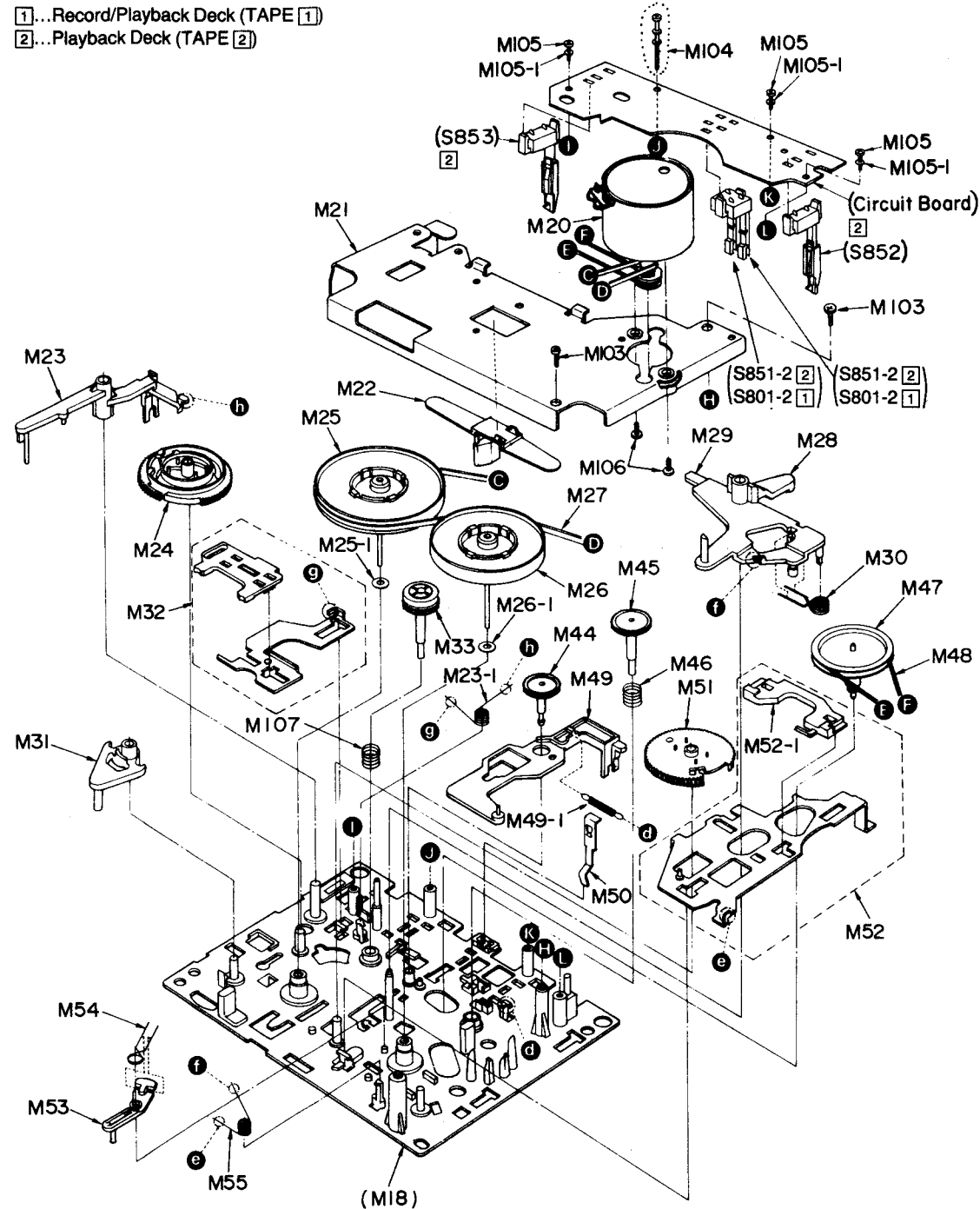
Takeup Tension	More than 90 g
Playback torque	40 ⁺²⁰ ₋₁₂ g • cm
Fast Forward torque	90 ⁺³⁵ ₋₂₅ g • cm
Rewind torque	90 ⁺³⁵ ₋₂₅ g • cm
Pressure of pressure roller	210±30 g
Wow and flutter	Less than 0.17% (WRMS)

Mechanism Operation: Full Auto Stop.

■ BOTTOM VIEW

Notes:

- ①...Record/Playback Deck (TAPE ①)
②...Playback Deck (TAPE ②)

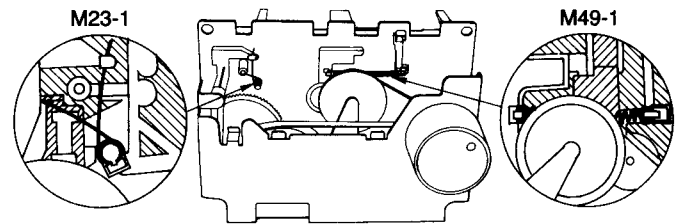
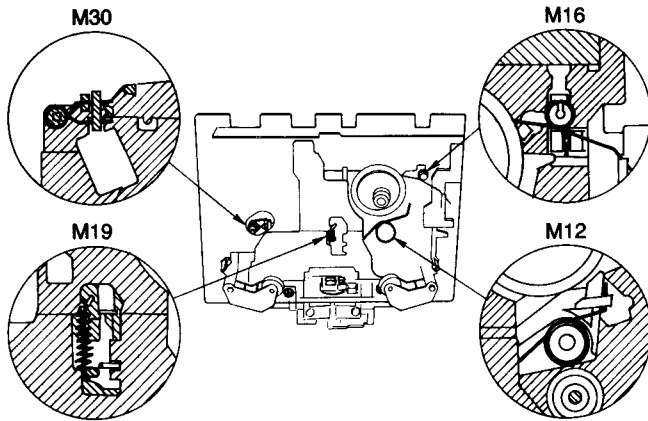


REPLACEMENT PARTS LIST

Ref. No.	Part. No.	Part Name & Description
MECHANICAL PARTS		
M1	RMDG0010Z	Head Block Ass'y (Tape ①)
M1	RMDG0011Z	Head Block Ass'y (Tape ②)
M2	RUA9029X	Head Base
M3	RUB342Z	Pinch Roller Change Rod
M4	RUB347Z	Arm, Take Up
M5	RDMG0002Z	Reel Table Ass'y (Reverse)
M6	RDMG0001Z	Reel Table Ass'y (Forward)
M7	RUB358Z	Shaft, Plunger Ass'y
M8	RUEG0006Z	Plunger Ass'y
M9	RUB344Z	Lever, Switch
M10	RDG5772Z	Gear, Take Up Relay
M11	RUB353Z	Brake Rod
M12	RUBG0001Z	Main Lever Ass'y
M12-1	RUW14Z	Spring (Main Lever Ass'y M'tg)
M13	RUBG0007Z	Pinch Roller Ass'y (Reverse)
M13-1	RUW13Z	Spring (Pinch Roller Ass'y) (Reverse)
M14	RUBG0006Z	Pinch Roller Ass'y (Forward)
M14-1	RUW12Z	Spring (Pinch Roller Ass'y) (Forward)
M15	RUB343Z	Lever, FF
M16	RUB414Z	Cassette Lock Rod
M16-1	RUW17Z	Spring (Cassette Lock Rod)
M17	RUB341Z	FR Change Rod
M18	RUA90001Z	Mechanism Chassis Ass'y
M19	RUD9Z	Spring (Head Base)
M20	RFM68Z	DC Motor Ass'y
M21	RUL734Z	Bracket, Flywheel
M22	RMD5001Z	Spacer
M23	RUB350Z	Lever, Main Control
M23-1	RUW10Z	Spring (Main Control Lever)
M24	RDG5776Z	Gear, Main
M25	RDWG0001Z	Flywheel Ass'y (Forward)
M25-1	QBW2123	Washer (Flywheel Ass'y M'tg) (Forward)
M26	RDWG0002Z	Flywheel Ass'y (Reverse)
M26-1	QBW2124	Washer (Flywheel Ass'y M'tg) (Reverse)
M27	RDV43Z	Belt, Main
M28	RUB348Z	Arm, FF
M29	RUB348Z	Lever, FF
M30	RUW9Z	Spring (FF Arm)
M31	RUB354Z	Arm, FR Select
M32	RUBG0003Z	FR Rod Ass'y
M33	RDGG0003Z	Reel Table Gear Ass'y
M44	RDG5773Z	Gear, FF Relay
M45	RDG5769Z	Gear, Reel Table
M46	RUQ10Z	Spring (Back Tension)
M47	RDRG0001Z	Main Pulley Ass'y
M48	RDV42Z	Belt, FF
M49	RUB349Z	Lever, Sub Control
M49-1	RUD6Z	Spring (Sub Control Lever)
M50	RUS608Z	Spring (Cassette Pressure)
M51	RDG5775Z	Gear, Sub
M52	RUBG0004Z	FF Rod Ass'y
M52-1	RUB345Z	FF Select Rod
M53	RUB359Z	Lever, Take Up Change
M54	RUW15Z	Spring (Take Up Change Lever)
M55	RUW8Z	Spring (FF Rod Ass'y)
M101	XTN2+8B	Screw (Head Block Ass'y M'tg)
M102	XTN2+5B	Screw (Head Block Ass'y M'tg)
M103	XTN26+7B	Screw (Circuit Board, Flywheel Bracket M'tg)
M104	XYC2+FF15	Screw (Circuit Board M'tg)
M105	XTN2+5B	Screw (Circuit Board M'tg)
M105-1	XWG2	Washer (Circuit Board M'tg)
M106	XSN26+3	Screw (DC Motor Ass'y M'tg)
M107	RUQ30Z	Spring (Back Tension)
M108	RNL1Z	Damper Arm

A	2	101	1	102	19	5	7	12-1	8	9	23	21	22	105	105-1	104	105	105-1	105	105-1			
		3			10	6									20				103				
B		13	13-1	4	11		14-1	16-1	12	14	8	7	16	25	25-1	33	26-1	27	106	29	28	30	47
		108	15											31	32	107	49-1	26	45	46	51	52-1	48
																	23-1	44	49				
C			17				18				53	54		55	(18)			50				52	

■ SPRING PARTS LOCATION



DISASSEMBLY PROCEDURES FOR THE MAJOR MECHANICAL PARTS

■ PINCH ROLLER (Fig. 1)

- Remove the two ribs and pull out the pinch roller (L, R)

■ HEAD BLOCK Ass'y (Fig. 1)

- Remove the one screw M101 (3×8)mm and the one screw M102 (3×5)mm.

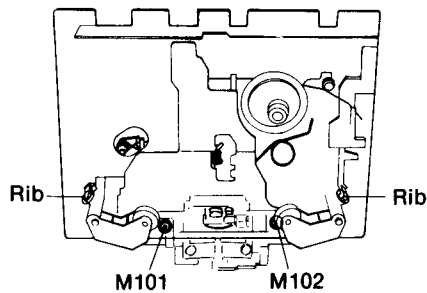
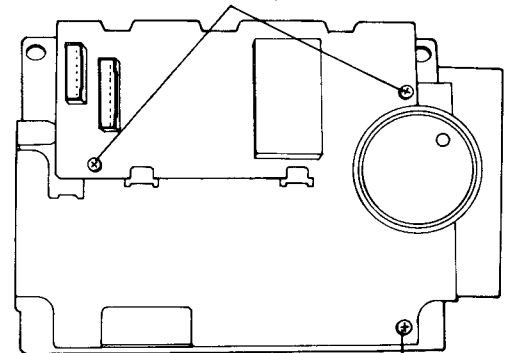


Fig. 1

M103 (Remove the circuit board)



M103
(Remove the flywheel bracket)

Fig. 2

■ MOTOR Ass'y (Fig. 2, 3)

- Remove the two screws M103 (2.6×7)mm and remove the print circuit board. (Fig. 2)
- Remove the one screw M103 (2.6×7)mm and remove the flywheel bracket (Fig. 2)
(At this time, the belt also comes off. To install the belt, see the section below on installing the belt)
- Remove the two screws M106 (2.6×3)mm. (Fig. 3)

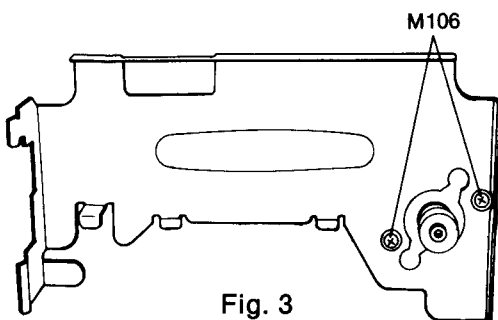


Fig. 3

■ FLYWHEEL Ass'y (Fig. 4)

- Remove the flywheel bracket by removing the motor ass'y.
- Pull out the flywheel ass'y in the direction of arrow.

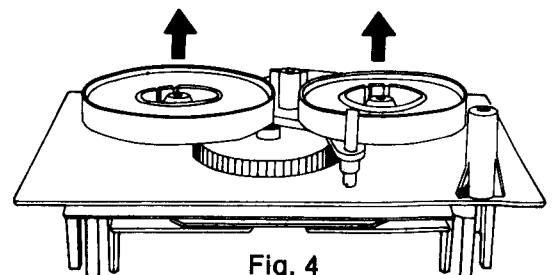


Fig. 4

■ INSTALLING THE BELT

- If the belt has come off, install as follows.
(The flywheel bracket has been removed in the following illustrations.)

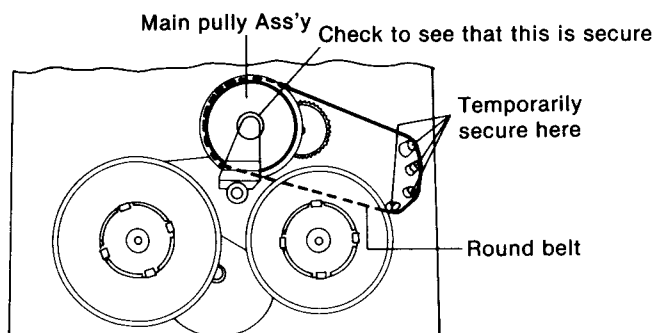


Fig. 5

- Attach the round belt to the main pulley ass'y and temporarily secure to the base on the mechanism chassis.
(Check to be sure that the main pulley ass'y is firmly secured since the rubber tension of the belt will pull on it.)

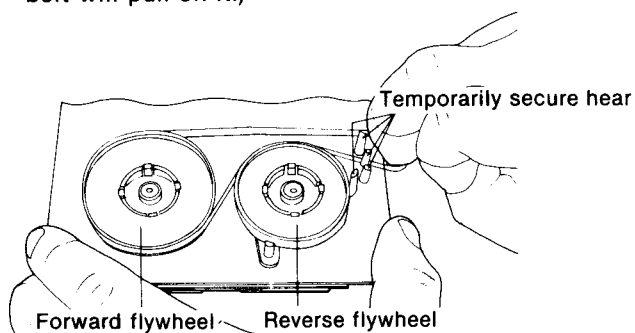


Fig. 6

- Attach the flat belt to the forward flywheel. Then attach it to the reverse flywheel and then temporarily secure it to the base where the round belt is secured. (Fig. 6)

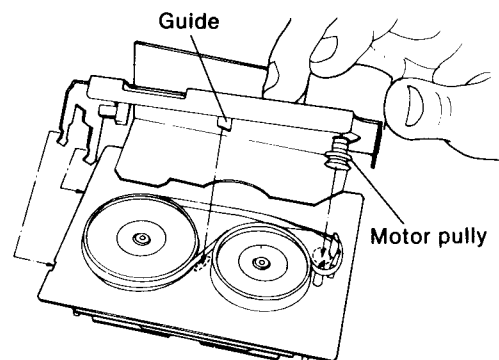


Fig. 7

- When mounting the flywheel bracket, position the mechanism chassis and the flywheel bracket so that the motor pulley and guide fit on the chassis as shown in Fig. 7.
- Screw down the flywheel bracket. (Fig. 8)
- Using a screwdriver, position the flat belt on the top side of the motor pulley and then the round belt on the bottom side of the motor pulley.

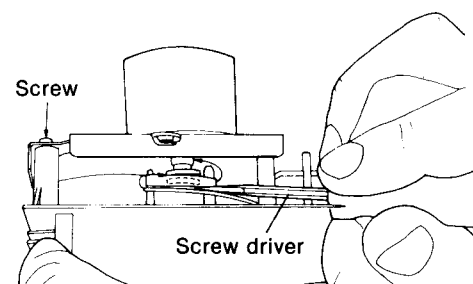
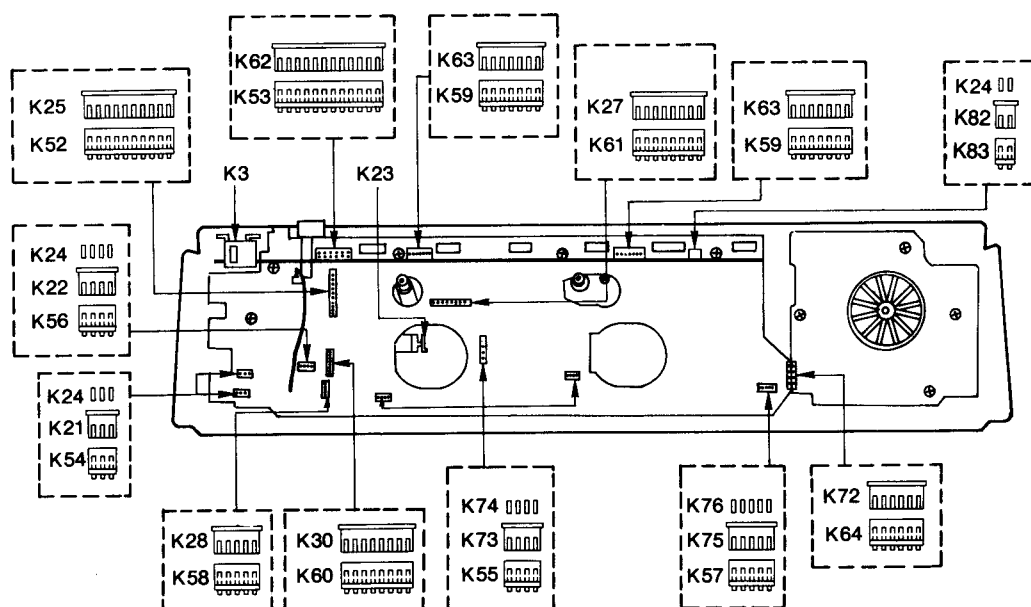
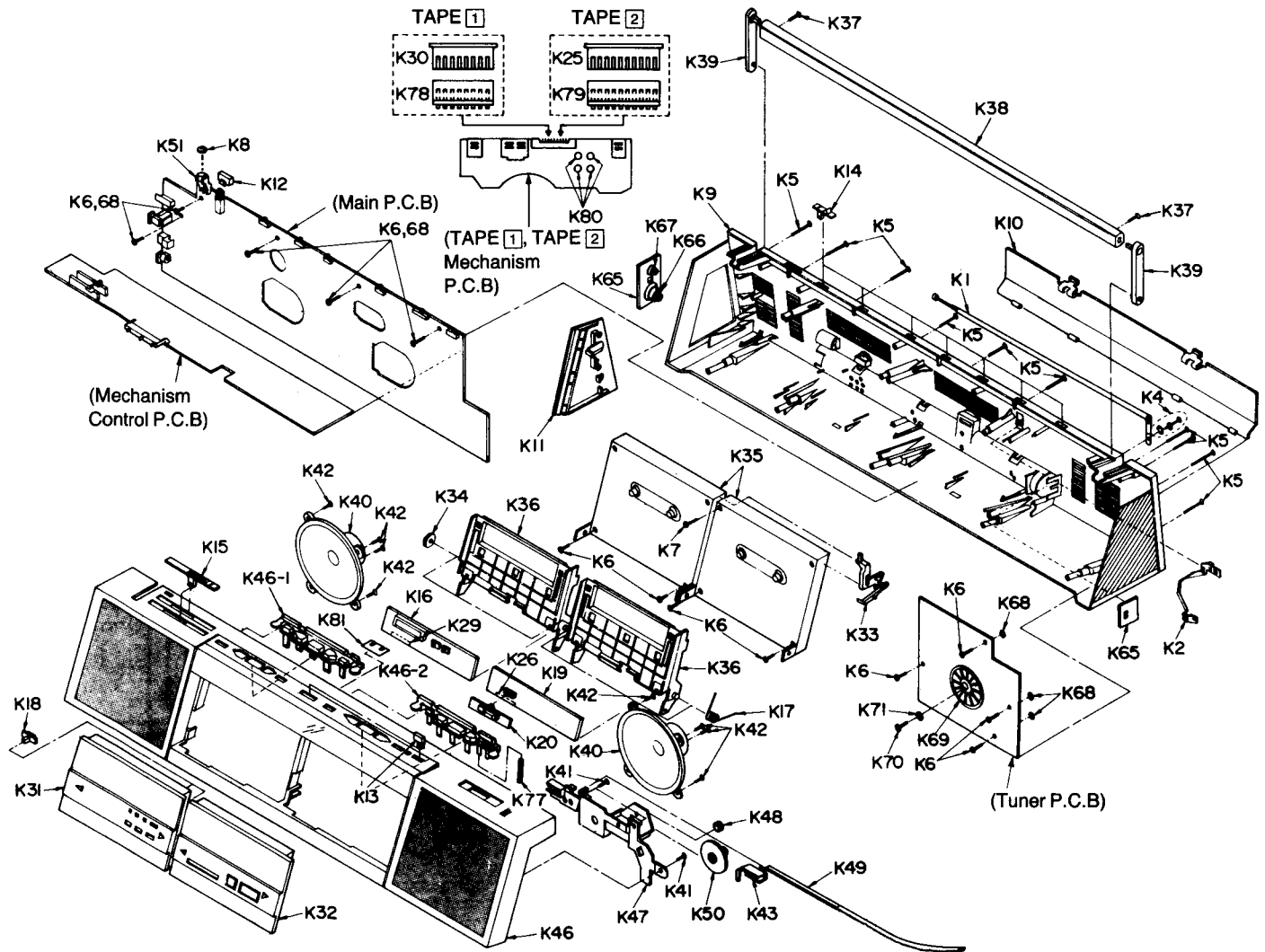


Fig. 8

CABINET PARTS LOCATION





REPLACEMENT PARTS LIST

•The color name in parentheses () in the parts list is the color of that part.

Ref. No.	Part. No.	Part Name & Description	Ref. No.	Part. No.	Part Name & Description	Ref. No.	Part. No.	Part Name & Description
CABINET PARTS								
K1	XEARR225DAK	Telescopic Antenna	K27	RJS8L16Z	Socket (8P) (CS6)	K55	RJP4G10Z	Plug (4P) (CP4)
K2	RJT1033Z	Antenna Terminal	K28	RJS5L15Z	Socket (5P) (CS8)	K56	RJP4G4Y	Plug (4P) (CP9)
K3	RMD1138Z	Angle, P.C.B Holding	K29	RJS5L16Z	Socket (5P)	K57	RJP5G10Z	Plug (5P) (CP2)
K4	XYN3+F15FY	Screw ⊕ 3×15 (Antenna M'tg)	K30	RJS8L13Z	Socket (8P) (CS7)	K58	RJP5G20Z	Plug (5P) (CP8)
K5	XTV3+35G	Tapping Screw ⊕ 3×35 (Rear Cabinet M'tg)	K31	RYP1XFW50M	Cassette Lid Ass'y (Tape 1)	K59	RJP7G11Z	Plug (7P) (CP12, CP13)
K6	XTV3+12G	Screw ⊕ 3×12 (Circuit Board, Mechanism M'tg)	K32	RYP2XFW50M	Cassette Lid Ass'y (Tape 2)	K60	RJP8G18Z	Plug (8P) (CP7)
K7	XTV3+20G	Screw ⊕ 3×20 (Mechanism M'tg)	K33	RUB410Z	Eject Lever	K61	RJP8G20Z	Plug (8P) (CP6)
K8	RHG2104Z	Microphone Rubber	K34	QDG110Z	Dumper Gear	K62	RJS12M3Z	Socket (12P) (CS14)
K9	RKF801Y	Rear Cabinet	K35	RZCXFW50J	Ornaments Plate Ass'y	K63	RJS7M3Z	Socket (7P) (CS12, CS13)
K10	RKK306Z	Battery Cover	K36	RYQXFW50J	Cassette Holder Ass'y	K64	RJS6M5Z	Socket (6P) (CS15)
K11	RKE539Z	Jack Board (Black)	K37	UTC3+8CFN	Tapping Screw ⊕ 3×8 (Handle M'tg)	K65	RUP2028Y	Circuit Board (Battery)
K12	RBC834Z	Button, Power	K38	RKH140Z	Handle (Black)	K66	RJC511Z	Spring, Battery (-)
K13	RBC840Z	Button, Stop/Eject	K39	RKX282Z	Arm, Handle (Silver)	K67	RJC751Z	Spring, Battery (-)
K14	RBD363Z	Knob, Timer Stand by/TPS/Blank Skip/Tape Selectors/Function Selector/Band/Mode Selector/Beat Proof	K40	EAS10P288S	Speaker	K68	RNW462Z	Spacer
K15	RBD364Z	Knob, Volume/Tone	K41	XTV3+12G	Tapping Screw ⊕ 3×12 (Dial Chassis M'tg)	K69	RDG5778Z	Gear, Dram
K16	RSC24610Y	LCD Circuit Ass'y	K42	XTV3+8G	Tapping Screw ⊕ 3×8 (Speaker M'tg)	K70	XSN26+6B	Screw ⊕ 2.6×6 (Dram Gear M'tg)
K17	RUS647Z	Spring (Cassette Lid)	K43	RDP304Z	Dial Pointer (White)	K71	XWA4B	Washer Ø4 (Dram Gear M'tg)
K18	RBD365Z	Knob, Timer Set Selector	K46	RYMXFW50M	Front Cabinet Ass'y	K72	RJP6G16Z	Plug (6P) (CP15)
K19	RSC24611Z	Reverse Mode Block	K46-1	RBC835Z	Button, Mechanism (Tape 1)	K73	RJS4L4Z	Socket (4P) (CS4)
K20	RBD366Z	Knob, Reverse Mode	K46-2	RBC842Z	Button, Mechanism (Tape 2)	K74	RJT807Z	Terminal (Socket)
K21	RJS3L3Z	Socket (3P) (CS10, CS11)	K47	RUA668Z	Dial Chassis	K75	RJS5L4Z	Socket (5P) (CS2)
K22	RJS4L3Z	Socket (4P) (CS9)	K48	RDG5836Z	Intermediate, Gear	K76	RJT807Z	Terminal (Socket)
K23	RJC314Y	Battery Terminal (+)	K49	RDE157Z	Ruck, Dial Pointer	K77	RUC35Z	Coil Spring
K24	RJT707Z	Terminal (Socket)	K50	RBT255Z	Knob, Tuning (Black)	K78	RJP8G17Z	Plug (8P) (CP801)
K25	RJS10L13Z	Socket (10P) (CS5, CS10)	K51	RJM157Z	Built-in Microphone	K79	RJP10G17Z	Plug (10P) (CP851)
K26	RJS8L15Z	Socket (8P)	K52	RJP10G18Z	Plug (10P) (CP5)	K80	RJS1H1Z	Pin
			K53	RJP12G11Z	Plug (12P) (CP14)	K81	RJT1041Z	Shield Plate
			K54	RJP3G4Y	Plug (3P) (CP10, CP11)	K82	RJS2L4Z	Socket (2P) (CS16)
						K83	RJP2G10Z	Plug (2P) (CP16)

ELECTRICAL PARTS LIST

ELECTRICAL PARTS LIST

Numbering System of Resistor

Example ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value (100Ω)
ERX	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value (2.2Ω)

Resistor Type	Wattage Tolerance
ERD: Carbon	10 : 1/8 W J : $\pm 5\%$
ERD: Metal Film	12 : 1/2 W
ERX: Metal Film	25 : 1/4 W
ERQ: Fuse Type Metal	1 : 1 W
RRD: Carbon (Chip Type)	18 : 1/8 W

Numbering System of Capacitor

Example					
ECKD	1H	102	Z	F	
Type	Voltage	Value (1000 pF)	Tolerance	Pecularity	
ECEA	50	M	R47		
Type	Voltage	Pecularity	Value (0.47 μF)		

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA: Electrolytic	OJ : 6.3 V	2H : 500 V DC	C : ±0.25 pF
ECCD: Ceramic	1A : 10 V	1 : 100 V	J : ±5%
ECKD: Ceramic	1C : 16 V	DKC : 400 V AC	K : ±10%
ECQM: Polyyster	1E : 25 V		Z : +80%, -20%
ECQP: Polypropylene	1H : 50 V		P : +100%, -0%
	1V : 35 V		
	50 : 50 V		
ECET: Electrolytic			
ECEA□□□□: Non Polar Electrolytic	25 : 25 V		
	16 : 16 V		
QCUC□: Ceramic (Chip Type)			
ECUX: Ceramic (Chip Type)			

Ref. No.	Part. No.	Ref. No.	Part. No.	Ref. No.	Part. No.	Ref. No.	Part. No.	Ref. No.	Part. No.
RESISTORS									
R1	ERDS2TJ221	R111	ERD25FJ180	R132,136,232,		C19,28,38,41	ECEA1HU010	C119,127,219,	
R2,5	ERDS2TJ101	R112,117,212,		236,303,321,333,		C21	ECEA1HU2R2	227,310,326,329,	
R3,12	ERDS2TJ470	217,327	ERDS2TJ153	339,347,348,357,		C24	ECKD1H471KB	338,357	ECEA0JU101
R4	ERDS2TJ824	R114,118,214,		359,369,382,383	ERDS2TJ103	C32,34	ECFT1C103MD		
R6,7	ERDS2TJ471	218,308,315,325,				C36	ECEA1HU0R1	C122,222,302,	
R8,11,15	ERDS2TJ392	360,374,384	ERDS2TJ222	R133,233	ERDS2TJ1R0	C37	ECEA1CU100	322	ECEA1HU0R1
R9,21	ERDS2TJ474			R302,370	ERDS2TJ681	C39	ECQM1H102KV	C128,228	ECEA1AU470
R10	ERDS2TJ103	R115,215	ERDS2TJ821	R304,305,340,		C59,117,123,126,		C129,229,352	ECEA0JU471
R13	ERDS2TJ152	R120,122,220,		363,364,365,366,		134,217,223,226,		C130,133,230,	
R14	ERDS2TJ102	222	ERDS2TJ183	372	ERDS2TJ471	234,306	RCBS1H102KB	233,303	ECFT1C104MD
R16,20	ERDS2TJ682	R121,221	ERDS2TJ223					C132,232,334,	
R17	ERDS2TJ100	R123,223,311,		R318,344	ERDS2TJ470	C101,105,106,		353	ECFT1C153MD
R18,19	ERDS2TJ333	316,322,323,324,		R319	ERDS2TJ2R2	109,110,115,120,		C304	ECQP2A472JZ
R22	ERDS2TJ223	330,336,343,345,		R328,332	ERDS2TJ152	121,124,125,136,		C308	ECQP2A223JZ
R101,201,361,		346	ERDS2TJ472	R329,337,342	ERDS2TJ332	201,205,206,209,		C309,316,317	RCBS1C332MX
362	ERDS2TJ333			R338	ERDS2TJ154	210,215,220,221,		C313	ECFT1C683MD
R102,202	ERDS2TJ822	R124,224	ERDS2TJ331	R341	ERD25TJ106	224,225,236,307,		C314	ECEA1CU221
R103,107,127,		R125,130,225,		R354,355,356,		311,315,321,330	ECEA1HU010	C318,340,354	RCBS1C103NY
135,203,207,227,		230,385	ERDS2TJ122	358,367,368	ERDS2TJ221			C323	ECEA1HUR22
235,313,326	ERDS2TJ682	R126,134,226,		R373	ERDS2TJ181	C102,103,108,		C324,325,327,	
		234,310,376,378,		R386	ERX12ANJR22U	111,202,203,208,		345	ECEA1CU100
		388	ERDS2TJ101			211,355	RCBS1H471KB	C328	ECEA1EU4R7
				CAPACITORS				C331,332,337	ECEA1CU101
R104,108,116,		R128,131,228,		C1,4,6,10,11,13	ECKD1H102MD	C104,112,204,		C333,335	ECQP2A822JZ
119,137,204,208,		231,301,306,307,		C2,7	ECCD1H180KC	212	ECFT1C333KD	C339	ECEA1AU221
216,219,237	ERDS2TJ473	331,335,377,379,		C3,5,12	ECCD1H050CC	C107,113,207,		C341	ECEA1CU332
R105,110,205,		380,381	ERDS2TJ102	C8	ECCD1H150KC	213,305,343	ECEA0JU470	C342	ECQV1H474JZ
210	ERDS2TJ392			C9	ECCD1H470KC	C114,214	RCBS1C152MX	C344,350	ECEA0JU221
R106,206,211,		R129,229,309,		C14,15,17,22,23,		C116,216	ECFT1C233MD	C356	ECEA1HUR47
312	ERDS2TJ220	314,334,351,353,		26,31,33	ECFT1C223MD	C118,131,218,			
R109,113,209,		387	ERDS2TJ105	C16,27	ECKD1H103ZF	231,319	ECFT1C473MD		
213	ERDS2TJ104			C18,29	ECEA0JU101				

ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description
ACCESSORIES		
A1	RP-AC901M	AC Adaptor Δ
A2	RQX4732Z	Operating Instructions
PACKINGS		
P1	RPK2210Z	Gift Box
P2	RPH417Z	Packing Sheet
P3	RPH508Z	Packing Sheet
P4	RPN9515Z	Cushion
P5	RPP435Z	Protection Cover

REPLACEMENT PARTS LIST

Important safety notice
Components identified by  mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.